

**KNOWLEDGE AND ATTITUDES OF UNDERGRADUATE
NURSES TOWARDS ORGAN DONATION AND
TRANSPLANTATION IN A SELECTED CAMPUS OF A
COLLEGE IN THE EASTERN CAPE**

By

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ABSTRACT

South Africa has a low organ donation and transplantation rate despite the availability of medical professionals with the expertise to perform such transplants. This can be attributed to various factors, such as knowledge and attitudes towards organ donation and transplantation. Despite the efforts of the Organ Donor Foundation in South Africa by conducting awareness and education campaigns organ donation rates remains low. There is a wide discrepancy in the rate of organ donation among the different ethnic groups in the country, perhaps due to a lack of knowledge or for cultural or religious reasons.

Nurses, as health-care providers, have an important role to play in enabling patients and families to deal with the topic of organ donation. This cross-sectional study investigated the knowledge and attitudes of 268 pre-registration nursing students towards organ donation, at a nursing college in Mthatha, using an anonymous, self-administered questionnaire for data collection. A stratified convenient sampling method was used. The data was captured and analysed using the SPSS statistical package, Version 21; thereafter, descriptive and cross-tabulation analyses were performed on the data.

Results

The majority of respondents (62.8%) were aware of organ donation with a small number (1.6%) registered as organ donors. Ethnicity and religion did not influence an individual's decision to donate his/her organs, which suggested that the decision was a personal one. There was no association between age group and willingness to donate a kidney to a relative, although younger respondents were willing to donate kidneys as living donors. There was also no clear relationship between gender and willingness to donate an organ (p-values of 0.03). Knowledge about organ donation was seen as a strong predictor of the attitudes towards organ donation. The majority of respondents were willing to donate organs for transplantation to save the lives of others. It is highly recommended from the results of the study that awareness campaigns to promote organ donation using various strategies and emphasising altruistic motives can increase the organs for donation.

Key words: Organ donation, transplantation, attitudes, knowledge, student nurses, South Africa

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GLOSSARY OF TERMS

Term	Definition of term
Attitude	The way that you think and feel about someone or something, a feeling or way that you behave towards that shows how you think and feel (“Attitude”, 2005:81)
Black	A person belonging to a race of people having dark skin (“Black”, 2015)
Brain death	An irreversible form of unconsciousness characterised by a complete loss of brain function, while the heart continues to beat (“Brain death”, 2010:187).
Cadaver	A corpse used for dissection and study (“Cadaver”, 2010:205).
Cadaveric donor	An organ or tissue donor who has already died (“Cadaveric donor”, 2010:205).
Clan	Also referred to as “Iziduko” in Xhosa, these are family names, which are considered more important than surnames; this is how each Xhosa person can trace their family history back to a specific ancestor or stock (“Clan”, 2005:98)
Donor	A human or other organism that gives living tissue to be used in another body, for example, blood for transfusion, or a kidney for transplantation (“Donor”, 2010:441).
End-stage disease	Is a disease condition that is essentially terminal because of irreversible damage to vital tissues or organs (“End-stage disease”, 2010:461).
Informed consent	The prospective subject’s agreement to participate voluntarily in a study as a subject, which the subject reaches after assimilating essential information about the study (“Informed consent”,

Term	Definition of term
	2010:688).
Intensive care unit	A hospital unit in which patients requiring close monitoring and intensive care are kept. An ICU contains highly technical and sophisticated devices and equipment and is staffed by personnel who are trained to deliver critical care (“Intensive care unit”, 2010:697).
Knowledge	The information, understanding and skills that you gain through education or experience (‘Knowledge”, 2005: 821)
Living related donor	A donor who is a close blood relative of the recipient (“Living related donor”, 2010:782).
Living unrelated donor	A donor who is not a close blood relative of the recipient (“Living unrelated donor”, 2010:782).
Organ	A structural part of a system of the body that is composed of tissues and cells, that enables it to perform a particular function, such as the liver or spleen (“Organ”, 2010:956).
Organ trafficking	The recruitment, transport, transfer, harbouring, or receipt of living or deceased persons or their organs. This is by means of the threat or use of force or other forms of coercion, of abduction, of fraud, of deception, of the abuse of power or of a position of vulnerability, or of the giving to, or the receiving by, a third party of payments or benefits to achieve the transfer of control over the potential donor, for the purpose of exploitation by the removal of organs for transplantation (Declaration of Istanbul on Organ Trafficking and Transplant Tourism, 2008:1228).
Solid organ	Any organ that does not contain a cavity or lumen and that is not gaseous; that is an organ, which consists of parenchyma and stoma, where the latter is often arranged as trabeculae or

Term	Definition of term
	surrounding groups of parenchymatous cells to provide support e.g. liver or kidney ("Solid organ", 2006:1737).
Transplantation	The transfer of tissue or an organ from one site to another or from one person or organism to another ("Transplantation", 2010:1371).
White	A person of European ancestry ("White", 2000).

CHAPTER 1: OVERVIEW OF THE STUDY

Operational definitions

Attitude

The way that you think and feel about someone or something, a feeling or way that you behave towards that shows how you think and feel ("Attitude", 2005:81)

Knowledge

The information, understanding and skills that you gain through education or experience ('Knowledge', 2005: 821)

1.1 Introduction

Transplantation is the therapy of choice and a lifesaving procedure for a patient with end-stage organ failure (Siminoff, Gordon, Hewlett & Arnold. 2001:71). In South Africa, most of the transplantations involve bone marrow, cornea, kidney, heart and liver whilst worldwide are kidneys, heart, lungs, liver, pancreas, cornea, small bowel and facial tissue, with the majority of transplanted organs being kidneys. Only the kidney and liver lobe can be donated by living donors. The possibility of a transplant is largely dependent on the availability of compatible transplant organs. Many patients die while awaiting organ transplantation, due to a scarcity of suitable organs. It is estimated that more than 100,500 of patients with end-state organ failures are on a waiting list in 2008 as reported by United Network for Organ Sharing (Urden, Stacy & Lough, 2010:88).

This medical intervention of organ and tissue donation and transplantation became a reality in 1954, when the first successful kidney transplant from a living donor and cadaveric donor between two identical twins was performed in Boston, United States of America by surgeons Murray and Harrison, together with the nephrologist Merrill. This was followed by other successful organ transplants: lungs in 1963, pancreas and kidney in 1966 and liver in 1967. Significant progress was made in quality and the quantity of kidney transplants until 1993, when numbers declined noticeably; at the time, there was a growing interest in transplanting organs from

animals such as baboons, which led to a shortage of human organs for transplantation (Bailey, 2012).

South Africa's contribution in the world history of organ transplantation was when Dr Christiaan Barnard performed the first heart transplant in Cape Town two months after his first successful kidney transplant on 3 December 1967. The first recipient of a new heart was a 53 year-old man who had collapsed with heart failure; unfortunately, survived for 18 days before succumbing to pneumonia from a lowered immune system from anti-rejection medication that he had been given. Later in 1968, Dr Barnard performed another heart transplant, where the patient survived for 19 months; another heart transplant patient in 1969 survived for five years after the operation (Brink, 2009:35). This revolutionary medical procedure set the stage for further advances in transplant medicine.

The waiting lists for transplants are long: The summary of statistics in the USA is presented in Table 1

Table 1: USA statistics (waiting for organs)

Total	Status	Period
42, 702	Died waiting for organs	2014
3, 617	Too sick for transplantation	2014
122, 403	Waiting list	2015
101,189	Waiting for one or two kidneys	2015

(Source: Organ Procurement and Transplantation Network, 2015).

South Africa currently has a low organ donation rate. The country with the highest organ donation rate is Spain, with more than 30 million organ donations (Millar, 2011). Millar is concerned about a larger population in South Africa that is utilising the public health services where the organ donation rates are at the lowest, as compared to the private sector with larger number of organ donation rates and fewer people utilising private health services (Millar, 2011). There are 4,300 South Africans waiting for a life-saving organ (Organ Donor Foundation, 2015).

1.2 Organ donation in South Africa

The first heart transplant that was performed in South Africa by Dr Christiaan Barnard raised serious ethical and legal questions worldwide, there were no laws governing organ donation and transplantation at the time of. The need for laws regulating organ donation and transplantation led to the introduction of a Bill by the United States Congress, which was “to establish a commission to assess and report on the ethical, legal, social and political implications of medical advances” (Brink, 2009:34). Organ donation in South Africa is not governed by legislation for example the opt-in or opt-out system in organ donation. Individuals who wish to donate their organs in the event of their death are encouraged to carry an organ donor card, but this does not necessarily ensure that organs of the deceased are in fact donated as the organs may not be suitable for donation on account of illness or a medical condition. Between 1996 and 2011, there has also been a decline in cadaveric donors whilst an increasing number of people were waiting to receive organs. Muller (2013:221) attributes this decline to religion, socio-economic factors and race. Cadaveric organs also depend on whether it is possible to retrieve the organs before they stop functioning completely. A number of patients die whilst waiting for a suitable organ. Many of these patients require various resources, such as hospitalisation, mechanical and pharmacological support in intensive care units. Recent advances, such as a segmental liver transplant from a living donor, especially for paediatric recipients, may increase the availability of this life-giving procedure (Botha, 2013:879).

It is estimated that one organ donor by donating a heart, liver, two kidneys, a pancreas and two corneas can supply organs to as many as seven people (Millar, 2011). More than 2,000 patients each year are waiting for transplantation, but in the period 2003–2010, fewer than 400 transplants were performed annually in South Africa (Stein, 2011).

In South Africa, the statistics on organ donation indicate a decline in the number of transplants done. This can be attributed to many reasons such as shortage of organs for transplantation, lack of resources in public health services and few people (18% of the population) that are on medical aid schemes. In 2000 and 2005, 1272 and 1436 transplants were performed respectively; comparing these figures with more recent years (table 1), it is very clear that there has been a decline in the number of transplantations in South Africa.

Table 2: Statistics on organ transplantation

Year	Transplants
2009	724
2010	604
2011	556
2012	573
2013	566

(Source: Organ Donor Foundation, 2015).

In 2009, 724 organ and cornea transplants were performed in South Africa, of which the majority were kidneys (290), liver (37) and heart (26). Corneal transplants appear to be on the decrease: - from 299 in 2009 to 231 in 2013. In South Africa over the past 10 years the number of transplants of organs obtained from deceased donors has not shown much improvement. This can be attributed to the shortage of cadaveric donor organs and increased survival of patients with head injury as a result of improved management of head injured patient (Muller, 2013). The majority of solid organ transplants in South Africa, (80%) of the transplantations of solid organs (excluding corneas) are performed in Cape Town and Johannesburg, Durban, Pretoria and Bloemfontein accounting for 20% (Organ Donor Foundation, 2015).

In 2010, of the 604 organs transplanted in South Africa; 344 were solid organ transplants. During the years 2011, 2012 and 2013, the organ donation rate has not shown an increase (see Table 1 above). However there has been an increase in living donation for kidneys, liver, lungs and pancreas. Heart transplantations are still relatively few when compared to cornea transplantations even though cornea transplants have dropped to such an extent that they are now imported from the USA (Stein, 2011). During 2010 to 2013 there were 98 heart transplantations and 913 cornea transplantations (Organ Donor Foundation of South Africa, 2013). According to the transplant statistics in 2013, in South Africa there are 4,300 adults and children on the waiting list for organs as well as corneas.

Stein (2011) attributes the shortage of all organs for donation to the ignorance of health-care practitioners rather than to that of the general public. Stein is of the opinion that medical practitioners are reluctant to approach the families of those who

are brain dead for organs, and are moreover ignorant about organ transplantation. Mekahli, Liukus, Fargue, Ranzchin and Cochat (2009:637) and Demir, Sellimen, Yiridim and Kucuk (2011:1427) align themselves with Stein (2011) and recommend that campaigns to inform health-care practitioners about organ donation transplantation would improve their knowledge.

The shortage of organs, coupled with a widespread ignorance about organ donation and transplantation in South Africa led to the formation of a non-profit organisation in 1988, the Organ Donor Foundation, by business and medical personnel. This organisation aimed at awareness and education campaigns and to inform the public and health-care professionals. In addition, it facilitates the registration of donors and supports the costs of emergency procedures to transport organs to the transplant centres (Organ Donor Foundation, 2015). The institution where the organs are to be harvested covers the costs of harvesting and transporting the organs (Rocher, 2010). According to Stein (2011), the foundation played a major role in empowering the public and health-care practitioners. He furthermore recommends that the South African government should give support to the organisation, to enable it to become even more successful in these campaigns.

1.3 Donation and harvesting of organs

In South Africa, anyone who is under the age of 70 years, in relatively good health with no signs of cancer, diabetes, hepatitis or an infectious disease such as HIV, is eligible to donate. Rocher (2010) has attributed the shortage of organs for donation to cultural and religious objections, lack of identification of donors at hospital level and lack of public awareness and knowledge. The Human Tissue Act 63 (1965) allows anyone who is competent to make a last will and testament, which stipulates that he/she is willing to be an organ donor and this will be signed by two witnesses. At the time of death, if no such stipulation has been made, the next of kin of the deceased may sign consent to donate the deceased's organs, as long as the will stipulates the deceased's willingness to be an organ donor. South Africa does not allow commercial organ transactions and as a result there is no compensation for donated organs (Rocher, 2010).

The procedure that is followed when the consent has been given by the families of patients, who have been certified brain dead, is as follows: As soon as a patient has been certified brain dead, the certifying clinician notifies the transplant co-ordinator

to come and collect personal and medical information about the patient. The transplant co-ordinator specialist nurse is summoned too, and performs a number of blood tests after obtaining the patient's information. The family is contacted and arrangements for the transplant are made by checking the donation list for a suitable recipient, who is also contacted. Thereafter, transportation arrangements are made for the organs (Organ Donor Foundation, 2011).

1.4 Organ donation among the Black community

A study conducted by Bhengu and Uys (2004:25) amongst Zulu-speaking people in KwaZulu Natal investigated how Zulu cultural norms and social structures influenced an individual's decision to either donate or receive an organ. They found distinct differences between black and white South Africans with regard to organ donation which were similar to those of Black Americans. In 1995 and 2000, the percentages with regard to organ donor referrals in South Africa among blacks were 28% and 17% respectively, whereas among whites were 60% and 72% so not only a significant increase but also far more willingness among whites to donate their organs. For the same years, the percentages with regard to donors were 7% and 12% among blacks and 77% and 76% among whites, respectively. The low percentages among black South Africans clearly indicate that there is a racial and cultural influence on the willingness to donate an organ (Bhengu & Uys, 2004:24).

It seems, moreover, that a lack of knowledge, especially amongst blacks, is the most significant factor affecting willingness to donate an organ. Bhengu and Uys (2004:2) reported a lack of knowledge among Zulu-speaking people with regard to organ donation and transplantation. They were found to have misconceptions about these issues, relating to Zulu life patterns, beliefs about death, burial and the hereafter, as well as values and social structures. Bhengu and Uys (2004:31) thus recommended that organ donation and transplantation be promoted among Zulu-speaking people, using culture-sensitive and culture-congruent approaches.

Parker (2013) similarly describes black South Africans as being reluctant or hesitant about organ donation, and reports that out of 50 million South Africans, only 80,000 are registered donors. In an interview with Dr Hadebe that examined African traditional beliefs towards this issue, Parker reports in *The Mail & Guardian* (2013) that black South Africans with traditional African beliefs see the body as inseparable from the soul or the spirit, and that they consequently emphasise the need for the

body to remain whole after death, and not to sanction the removal of any organs. Religions like Catholicism, Judaism, Muslim and Buddhists were cited as having no influence on a person's decisions with regard to organ donation and transplantation (Parker, 2013).

In view of these and similar findings in the South African context, the researcher decided to focus on the category of black undergraduate nurses and their views of organ donation and transplantation, since there is very little literature currently available on this group of people.

1.5 Rationale for the study

The rate of both cadaveric and living donation in South Africa is generally low, but the reasons for this have not been thoroughly explored. There is much literature available on organ donation and transplantation internationally, but far less about the situation in South Africa. Although it has been noted that the organ donation rate among black people is low, not enough research has been done to explore why this is so, and thus a South African investigation is required. It is further recommended that greater acceptance of organ donation and transplantation among the South African black population could be achieved by using appropriate strategies that are socially and culturally sensitive.

There has also been little research into nurses' knowledge of and attitudes towards organ donation, both internationally and locally. Nurses are in a unique position in that they are able to increase the supply of organs for donation through what is referred to as the *gate keeping function*. As so-called 'gate keepers', nurses are instrumental in initiating the transplantation process by identifying potential donors and raising the issue of donation with their families (Collins, 2004:227). They have the highest patient contact times and are in frequent communication with the communities they serve. This may result in a greater willingness of potential donors to donate their organs after death, or in the family responding positively to requests for organ donation.

1.6 Research aim and research question

The aim of the study is to describe the attitudes and knowledge regarding organ donation and transplantation among pre-registration nursing students at a nursing college in Mthatha.

The research question can thus be expressed as follows:

What are the attitudes and knowledge of pre-registration nursing students at a nursing college in Mthatha towards organ donation and transplantation?

The following objectives have been identified:

- To determine whether pre-registration nursing students are aware of the possibility of organ donation.
- To determine the factors associated with either willingness or unwillingness of pre-registration nursing students to donate organs.
- To determine the proportion of nursing students in each year of study willing to consider becoming organ donors.
- To determine the association between demographics and organ donation.
- To determine whether the nursing students were willing to encourage patients and their families to donate their organs.

1.11 Hypothesis

Statistical and research hypothesis are for testing and interpreting the results. The researcher has developed an alternative hypothesis as she believed that there is relationship between two or more variables. The following is the hypothesis:

- There is association between student prior knowledge and organ donation.
- There is association between demographic variables and organ donation.

1.12 Summary

Organ transplantation is a lifesaving measure that is only possible when suitable organs are in fact available for donation. There are long waiting lists for organs; this is a global challenge, and not exclusive to South Africa. In this chapter, we have looked at the history of organ donation and transplantation internationally and the

role played by South Africa in the history of organ donation. We also looked at the current situation and challenges with regard to organ donation in South Africa and in the USA. Highlights on who qualifies to be an organ donor, procedures that are followed in harvesting organs from a deceased donor, organs that can be harvested /donated have been addressed. Rationale for the study, the aim of the study, objectives and the research question has been addressed in this chapter. The next chapter will review the literature available on the attitudes and knowledge of nursing students, health-care professionals and the public towards organ donation and transplantation as well as organ commercialisation.

CHAPTER 2: BACKGROUND AND LITERATURE REVIEW

2.1 Introduction

Organ donation and transplantation is aimed at saving the lives of people when they are faced with organ failure. In the past 60 years, significant advances have been made, thus establishing a reliable and routine clinical practice that is beyond the experimental stage. These advances have raised legal and ethical queries as it goes along with cultural acceptance, legal and political evolution to make it possible for organ donation (Linden, 2009:165). The organs most commonly donated are the kidneys, heart, lungs, cornea and liver, with the kidneys being the organ most frequently donated (Rocher, 2010). However, even though organ donation as a reliable clinical practice is available, it is hindered by a lack of organs for donation due to cultural and religious objections, lack of identification of donors at hospital level and ignorance of the public (Rocher, 2010). Primary health-care plays a major role in promoting health within communities, and organ donation should not be an excluded concept (Conesa, Rios, Ramirez, Sanchez(a), Sanchez(b), Fernandez, Rodriguez & Ramos, 2005:2874). Health-care practitioners are the main drivers of primary health-care in communities.

The demand for organs in South Africa is higher than their availability leading to prolonged hospitalisation of patients waiting for organs (Mojela, Hairwadzi & Hift, 2006:1). The resulting low rate of organ donation warrants a collective effort of health-care professionals to improve the donation rate. Essman and Thornton (2006:2749) suggested that health-care practitioners' attitudes, knowledge and behaviours are essential factors for creating an environment for a positive influence on organ donation. Collins (2004:231) identified a lack of confidence and knowledge on organ donation amongst the nurses working in an Intensive Trauma Units in UK. Kim, Fisher and Elliot (2005:571) similarly found that intensive care nurses required education in order to increase organ donation pool in Korea.

The relevant literature has been reviewed and examined using the following headings:

- value of organ donation;
- factors influencing organ donation and transplantation : religious and cultural factors;

- factors influencing organ donation :external and emotional influences to the prospective donor towards organ donation and transplantation;
- time pressure and knowledge, both of which influence individuals' willingness to donate;
- public views, public or personal experiences and influence exerted by family members when consenting to donate;
- the impact of HIV/AIDS and other types of illnesses;
- attitudes towards and knowledge of health-care providers with regard to organ donation, organ shortages and beliefs about organ donation;
- commercialisation of organ donation.

2.2 Literature search strategy

The literature search was limited to documents published in the English language. Only studies between 1999 and 2015 were consulted, with the majority of studies chosen from 2005 to 2013. Five main databases were searched: PubMed Health, MEDLINE, ScienceDirect, CINAHL and Cochrane Library. In addition, the following online journals and websites were reviewed: SAGE Journals, Wiley Online Library, The Wall Street Journals, Elsevier, GOOGLE and GOOGLE SCHOLAR and systematically reviewed articles. Books and hard copies of journals were searched too.

Given the aims of the current study, the research studies chosen for this literature review focused on the knowledge and attitudes of health practitioners from different health disciplines, in particular the following: the attitudes of nursing staff towards organ donation and transplantation, the contentious issue of the sale/commercialisation of organs, public views on organ donation, factors influencing organ donation and the commercialisation of organ donation.

The keywords used were: knowledge, attitudes, and factors related to organ donation and transplantation. The following MeSH terms were used to refine the searches further: organ donation and transplantation, attitudes and knowledge, undergraduate nursing students, health-care professionals. The MeSH terms used were either "AND" or "OR"; the latter was used in advanced searching, which also included the specific years that fell within the time range of this study. Only the most relevant items of the 880 results obtained were selected and presented herein.

2.3 Overview of research studies

In this section, which forms the bulk of Chapter 2, we examine the literature that is relevant to organ donation and transplantation by looking at various issues, which have been identified as important by other researchers in the field. We start in Section 2.3.1 by looking briefly at the value of organ donation in the health of those in need of organs for survival. In Section 2.3.2 and Section 2.3.3, we then turn to religious, cultural and emotional factors and their role in influencing the decisions of potential donors and those of their family members whether they are willing to donate their organs after death. We also consider the impact of time pressure and knowledge in Section 2.3.4 whether does it really matter when the organs are requested and the influence of being given some knowledge on brain death and organ donation prior requested to give organ/s for donation. The views and experiences of members of the public as well as of family members around organ donation are also considered in Section 2.3.5. Section 2.3.6 focuses on the attitudes and knowledge of health-care providers and members of the public towards organ donation how their knowledge influences their attitudes towards organ donation and transplantation. In the final two sections (2.3.7 and 2.3.8), we consider the problem of organ shortages and beliefs about organ donation. And finally we discuss the commercialisation of organ donation.

In the following sub-section, we will start by considering the value of organ donation.

2.3.1 *Value of organ donation*

Organ transplantation had become well-known and well-established as a clinical practice with demand that has increased significantly over the years and that has led to a shortage of organs. Many countries are spending money on promoting the value of donating one's organs after one's death in order to save lives, campaigns that have had a positive effect firstly with regard to informing the public and the medical profession about the importance and value of organ donation and secondly by reducing the shortage of suitable organs.

Canova, De Bona, Ruminati, Ermani, Naccarato and Burra (2006:307) argued that the use of human substances, including the transplantation of organs, had become an integral part of modern health systems. They further regarded the transplantation

of organs as vital to the management of serious health conditions, not only in Italy (which formed the setting of their study) but across the world. They emphasised that organ transplantation was becoming more important and that the demand had increased significantly.

Lauri (2006:25) found that many developed nations in Europe are spending more money to promote organ donation by conducting health promotion campaigns. Alsaied, Bener, Al-Mosalamani and Nour (2012:1309); Collins (2004:232); Canova et al, (2006:311) suggest that campaigns promoting organ donation can reduce the shortage of organs.

Having looked at the value of organ donation and what the countries are embarking on to ensure availability of organs for donation, it is helpful to consider the various factors that influence people's decision to donate – or not to donate – their organs, both before and after death. In the next sub-section, we thus turn our attention to the religious and cultural factors.

2.3.2 Religious and cultural factors

A study was conducted by Olivier, Woywodt, Ahmed and Saif (2010:437) with the aim of ascertaining how different religions (Islam, Christianity, Jehova's Witnesses, Judaism, Hinduism, Sikhism, Buddhism, Confucianism, Shintoism and Taoism) viewed organ donation and transplantation. A significant role played by religion in organ donation was unfamiliar to health-care practitioners. They also found that, although there were differences between major faiths on how they viewed organ donation and transplantation, they shared a common ground of altruism. Altruism in Islam is an important principle and as it is about saving life therefore approves organ donation, Sikhism, Confucianism, Taoism also approve organ donation whilst Jesus Christians, Jehova's Witnesses, Buddhism also approve organ donation with the view that it is an individual choice. Shintoism disapproves organ donation and arguments are that the dead body is impure, dangerous and powerful therefore interfering with the corpse brings bad luck. A study by Slabbert, Mnyongani and Goolam (2011:272) among the Shinto people of Japan found that donating an organ was considered to be spiritually dirty. This belief was deeply embedded into many local indigenous belief systems and thus led to unwillingness to donate organs.

Religion and culture are seen by some studies as the source of internal core belief systems that influenced an individual's ability to donate or not to donate an organ for transplantation (Gilman, 1999:19; Olivier et al., 2010:437). However, it is also necessary to consider whether the family would actually allow organ harvesting to occur once the registered donor had died. The majority of the world's religions believe that it is the sole responsibility of the individual to donate or not to donate. The family's religious beliefs, emotional responses, cultural values need to be taken into consideration as it becomes the family members left behind who also need to give consent to harvesting of organs from a dead person.

In a systemic review of 18 qualitative studies (involving 1,019 participants) on factors that might influence the decision to be an organ donor, Irving, Tong, Jan, Cass, Rose, Chadban, Allen and Craig (2012:2526) identified several common themes: religious beliefs and cultural influences were seen as intertwined with mistrust of the medical team. Amongst the factors identified were unwillingness among the communities that were explored to talk about death and their view that death was a private matter. A common religious belief influencing organ donation and transplantation decisions was that a dead body must not be interfered with, as it would be needed as a whole in the next life.

Studies by Cantarovich (2005:22) and Irving et al. (2012:2533) had similar findings. The studies concluded that the refusal of relatives to give consent for their relatives' organs to be donated after death was connected to self-interest and resistance not religious beliefs but would use religious beliefs as an excuse. Culture and religion appeared to have a similar influence on decision-making process when people considered donating organs, either their own or those of their relatives.

Molzahn, Starzomski, McDonald and O'Loughlin (2005:233) conducted a study among the Indo-Canadian people of Canada, exploring their values and beliefs regarding organ donation. They found that, although the individual's decision-making was vital to giving consent to organ donation, the family and the community needed to be involved in the process too. They thus emphasised that no assumptions can be made about the beliefs of anyone based primarily on that person's ethno-cultural community. So if the community says 'no' to organ donation, then you cannot assume that *all* the individuals in that community will also say 'no', and vice versa.

Traditional or cultural beliefs about death were thus salient psychological factors that contributed to the community's negative attitudes and unwillingness to donate organs. While Molzahn et al. (2005:233) found that the Indo-Canadian people did not want to talk about death and organ donation, Olivier et al. (2010:439) found in their study in North West of England and East of Asia that opposition to organ donation was based on keeping the deceased's body intact. This may contribute to the low organ donation rate among members of a specific religion using religion as an excuse for their reluctance to donate (Olivier et al., 2010:442).

In an exploratory qualitative study by Davis and Randhawa (2006:281), cultural issues, religion and faith were found to be the main issues that prevented Black people in the United Kingdom from becoming organ donors. The high demand for transplant organs for the high incidence of end-stage renal failure amongst the Black Caribbean and Black Africans, coupled with a lack of supply of such organs, was noted to be more severe among this group than among other racial groups in the UK.

In a study conducted by Streat (2004:384), organ transplantation was described as a very complex issue because of the interplay between various beliefs, sentiments, symbols, emotions and rituals that are all concerned with the human body. For example, Buddhism holds that life continues in some form even after death therefore body to remain intact (Slabbert, Mnyongani & Goolam, 2011:271). Shintoism held that people were pure at birth but that they created impurities as they grew older, and that the deceased were thus impure. Harvesting organs and transplanting them into another person was regarded as "ego delusion" by Buddhists, and therefore as interfering with the life-death continuum (Slabbert, Mnyongani & Goolam, 2011:271).

There was some debate as to whether Shinto could be classified as a religion (Olivier et al., 2010:441). According to Slabbert et al. (2011), The Shinto people also believed that interfering with the deceased might damage the relationship between themselves and the dead. As a result, 90% of transplantations in Japan were from live donors (Olivier et al., 2010:441).

Barber (2007:94), who looked at the religion, culture and harvesting found that most religions support the altruism concept. Gypsies who is predominantly people from India and have lived in Balkans for centuries have a direct religious doctrine that

opposes organ donation as they believed that one year after death, the soul retraced its steps and that therefore all the body's organs had to be intact.

Olivier et al. (2010:438) with regard to Islam in UK revealed that Islamic scholars were seen to be in favour of and to support organ donation, whilst the majority of Muslims were still reluctant to donate, especially shunning cadaveric donation. This is an unexpected discrepancy. A number of concerns around cadaveric donation were raised; one of them was that burial must occur within 24 hours after death. With this belief being embedded in Islam, it made it impossible for organ retrieval to take place, because it took too long to retrieve the organs after death. However, it appears that Islam could be effectively used to foster organ donation among Muslims, using the principle of altruism, which involves taking into account the welfare of others, displaying selflessness and willingness to sacrifice something for another person; this is arguably the most important principle of Islam.

Rumsey, Hurford and Cole (2003:2849) conducted a study at a Midwestern University among 190 undergraduate students enrolled in general education classes. A 20-item questionnaire was used to assess the influence of knowledge and religiousness on attitudes toward organ donation. The findings of the study were that people were willing to donate their organs if they were supported by their religious communities and religious leaders. This suggests that religious leaders can be instrumental in conveying theological-based support for organ donation (Rumsey et al., 2003:2849).

Nacar, Centinkaya, Baykan and Poyrazoglu (2009), focusing on theology students in the Faculty of Theology of Erciyes University in Turkey, established that none of them had an organ donation card due to lack in knowledge regarding organ donation and being unaware of religious and legal aspects of organ donation. Approximately 16.5% (44) of students stated that it was religiously forbidden to donate an organ. These students might become the next religious / spiritual leaders in their communities, so it is unfortunate and even alarming that they are ignorant and/or misinformed about the topic, because it would mean that they would not be able to inform and advise their congregations appropriately in the future.

In the limited literature published in South Africa on the topic of organ donation and transplantation, the same core beliefs as found in international studies were identified. Bhengu and Uys (2004:1) conducted a study in Kwa Zulu Natal area

(urban and rural) to look at organ donation and transplantation within the Zulu culture. Bhengu & Uys (2004:1) reported that the majority of Zulu-speaking participants were willing to donate their organs after death. Although they had a lack of knowledge about organ donation and transplantation; their misconceptions about the topic were related to Zulu life patterns. They have no authority to donate organs because of the strong relationships between the living and dead. They thought that if this relationship is broken the ancestors will be very angry and cause illness, misfortune or even death to the living. Bhengu and Uys (2004:2) attributed their lack of knowledge on the topic to the Zulu patterns of life, subordination of wives and daughters to the husbands and fathers, beliefs about death that one joins the ancestors, burial and life thereafter, and their values and social structures.

Like Bhengu and Uys (2004:31), Van den Berg (2005) similarly concluded that there is a serious need for research around organ donation amongst South Africans. Van den Berg's findings suggested that a shortage of organs for donation could not only be attributed to ineffective harvesting techniques or ignorance. He claimed that cultural norms about the body and body parts which convey the social meaning, attitudes and social factors also played a major role in the willingness or unwillingness to donate an organ.

The above subsection looked at the influence of religion culture in organ donation internationally and locally. In the next subsection we will be looking at external factors influencing organ donation and transplantation. As it is difficult to separate religion and culture as internal or external factors, these will come up again in the following subsection.

2.3.3 External and emotional influences

Emotions, religion and culture are areas of concern in South Africa. External influences that are important in influencing the decision to become an organ donor or to donate one's organs include family attitudes, religion, knowledge, media stories and information on how to become an organ donor, while emotional influences include grief, apathy and fear (Watts, 2007). Attitudes, knowledge and actions are interrelated. The individual's interpretation of reality influences his/her decisions. Culture and religion are important external influences affecting the decision-making process in organ donation (Davis & Randhawa, 2006).

Emotion is seen by Gilman (1999:1) as an important factor in making the decision to donate that need to be properly assessed by those who request organs from the family. He argues that emotional responses to cultural values and spiritual values are seen to be more influential in decision-making for organ donation.

A study conducted by Alkhawari, Stimson and Warrens (2005:1326) in the UK among a Muslim Indo-Asian community in West London showed that the participants were aware of both living and cadaveric donation, although they demonstrated a lack of core knowledge on organ donation, transplantation and brain death. They voiced lack of respect for cadavers in hospitals and a mistrust of doctors whom they believed would do little to save the life of a potential donor as the doctors would be interested in them dying to get the organs. The unwillingness of relatives to donate or sign a donor card for a cadaveric donor, advice by the Imam on organ donation, and the body needing to remain whole after death for resurrection were amongst the most important emotional and external influences on organ donation rather than outright religious beliefs.

Manzari, Mohammadi, Heydari, Sharbaf, Azizi and Khaleghi, (2012: 659) argue that some families believed that their emotional and mental relationship with the dead still continued when they have donated the organs than being in a brain dead state. This view supports the willingness to donate the organs of their loved one who has died.

Having looked at the emotions influencing organ donation we now focus on time pressure and knowledge on organ donation.

2.3.4 Time pressure and knowledge

Lack of knowledge regarding the essential issues of transplantation, coupled with a lack of awareness of the immense need for organs and about the waiting lists for organs, has been identified by Holman (2013:9) as having a negative impact on the willingness to donate one's organs.

Decisions about donating a loved one's organs are often made within limited time and under stressful conditions. Asking for organs during the time of grieving was seen as inappropriate and usually did not yield favourable results (Manzari et al., 2012:654)

Organ donation is not only about the availability of organs but also involves knowledge about ethical and legislative issues around organ donation and transplantation processes.

Valdes, Johnson and Cutler (2002:131) and Mentor (2005:9) suggest that the period for asking for organs to be donated should be timed in such a way that the family of the deceased has a positive attitude towards such a request. Family needs to be given information on brain death long before the person dies so that they can decide. Valdes, Johnson and Cutler (2002:131) and Mentor (2005:9) suggest that informing the relatives timeously about the condition of their loved one and allowing them to accept their imminent death before beginning the organ donation process, can yield a positive response to a request for organs from the deceased. Building up a sense of trust with the family, yields a positive attitude towards consenting to organ harvesting.

In a study conducted by Jacoby and Jaccard (2010:e60), examining the relationship between support and quality of care given to relatives of a deceased in the Northeast, Midwest and Midsouth of the USA, the findings were that donor and non-donor families had different perceptions of quality of care for themselves and their loved ones. Other findings of the study were that there was a lack of knowledge about brain death, people were not given enough time to understand brain death, and there was a lack of emotional support from the medical and nursing personnel.

It appears from the literature reviewed thus far that timing of requesting organs from the families of the deceased plays a major role in influencing the willingness to donate organs. The following subsection will be focusing on the public views, experiences and family influence on organ donation.

2.3.5 Public views, experiences and family influence

Individuals generally tend to respect their family's opinions on organ donation, especially if it is the opinion of a senior member of the family, when deciding to be a donor or when making decisions to donate organs of a loved one (Alkhawari, Stimson & Warrens 2005:1330).

The family's opinion is important especially when the family opposes the willingness of the deceased loved one to donate. Northam (2013) pointed out that a lack of empathy and compassion by hospital staff was a contributing factor in families

deciding not to donate their loved one's organs. Northam (2013) recommended that both patients and their families needed to be taken through their journey of grieving with empathy and compassion.

A study conducted in China and Taiwan by Shih, Lai, Lin, Tsao, Chou and Chu (2001:77) involving 22 family members (who had consented to a cadaveric organ donation) aimed to determine how the family members felt after donation and to understand the family members' expectations of the health-care providers. The family members admitted that it had been difficult to give their consent for cadaveric donation due to the feelings experienced immediately following the loss of the relative. Significant concerns were around the donor's afterlife, stress due to controversy among family members over the decision to donate and stress due to the donation process (Shih et al., 2001). However, the fact that the relatives had ultimately donated the organs of their loved ones did have a positive impact on them as they demonstrated an increased appreciation of life through helping a person in need.

It is not known which factors are more responsible for the low rates of cadaveric and living organ donation around the world and in SA. A cross-sectional study conducted in Maryland, USA, by Boulware, Ratner, Sosa, Cooper, Laveist and Powe (2002:1683), investigated the factors that affected the general public's willingness to donate organs. Respondents from 385 homes were randomly selected. Of these homes 66% (254) were willing to donate an organ to a relative or sibling while they were still alive and 47% (179) were only willing to be cadaveric donors. Lack of trust was an important factor in reducing people's willingness to donate; this indicates that efforts to improve the trust levels of potential donors are essential.

Dierckx de Casterle, Verhaeghe, Kars, Collibrandt, Marleen, Stubbe, Deweirdt and Vincke (2011:236) studied the lived experiences of patients and their families with regard to an ethics of care by reviewing three research projects on the lived experience of patients and families in different situations, with regard to the ethics of care. The relationship between the patient and his/her relatives and the doctor as well as the autonomy of the relatives was the main focus of their study. The relatives acknowledged that they realised that consenting to donate the organs of their deceased loved ones was saving the lives of others and timing of organ request was not a matter of concern.

A study by Conesa, Rios, Ramipez, Del Mal Rodriguez, Rivas and Parilla (2004:2874) sought to determine public attitudes towards living organ donation compared to cadaveric donation. The aim of the study was to identify the psycho-social factors that might influence attitude among communities (urban and rural) in south-eastern Spain. It emerged from the research that there was great fear and ignorance of living donation among both population groups. Urban population group exhibited uncertainty about living donation although attitudes were generally more positive towards living donation to relatives or friends than to cadaveric donation.

Ndlovu, Korbyn and Modiba (1998:242) conducted a two-year study amongst the relatives of 44 Black brain-dead potential donors from the Garankuwa area in South Africa, with the aim of investigating attitudes towards organ donation. The majority of living-related potential donors approached for the study were willing to donate a kidney. The researchers concluded that, among Black South Africans, altruism (saving lives without financial gain) is a positive factor with regard to giving consent for organ donation. Recommendations from the study were that public education was required to address the ignorance, misconceptions and cultural beliefs regarding cadaveric donation.

Another South African study by Pike, Odell and Kahn (1993:91) was conducted to determine public attitudes towards organ donation among urban Whites, urban Blacks and rural Blacks. The majority of participants felt that the decision with regard to donation should be taken by the person before their death. Furthermore, the majority of Black participants were willing to be cadaveric donors the kidneys and the heart were the organs most preferred for donation but not the cornea. Reluctance to donate cornea may be associated with their cultural beliefs. A possible explanation for this might be that a deceased person was presumed to watch over those left behind, and thus, without corneas, they would not be able to look after them.

Understanding people's views, their experiences and the influence of the family on an individual's decision to donate will assist in planning how to approach both families and individuals about organ donation and transplantation.

Having looked at the people's views, their experiences and the influence the family has on an individual's decision to donate it is helpful also to consider the attitudes of health-care providers towards organ donation as they are in close contact with the

patients and their relatives. In the next sub-section we thus turn our attention to the attitudes of health-care providers towards organ donation.

2.3.6 Attitudes and knowledge of health-care providers

The attitudes and knowledge of health-care providers towards organ donation and transplantation is another area that requires more research. The majority of studies conducted by Jones-Riffell and Stoeckle (1998:280) in the USA, Kim, Fisher and Elliot (2006a:580) in Korea and Zampieron, Corso and Frigo (2010:375) in Italy and Essman and Thornton (2006:2745) have thus far highlighted certain gaps in the knowledge of health-care providers on organ donation and its processes. Thus the researchers recommended that provision of accurate and relevant information regarding organ donation and transplantation. Brain death determination, organs that can be donated as well as value of organ donation were the areas of focus on organ donation and transplantation.

In a study conducted by Shaheen and Souqiyyeh (2004:1878) among the Islamic population of Saudi Arabia, it was noted that the donation rate had remained low, despite a resolution issued by the Saudi Arabian Council in 1982 with regard to organ donation and transplantation that permitted tissue and organ transplantation from both the living and from cadaveric donors. There were, however, some public and medical obstacles related to religious beliefs that interfered with cadaveric donations which need to be addressed by informing the public and medical population about the value of organ donation and transplantation.

A study carried out by Kiberd (1998:217) among nursing students in Canada, using a quasi-experimental design to measure student's attitudes towards organ donation and transplantation and the impact of a nursing school's curriculum on student nurses' attitudes towards organ donation and transplantation. The study findings were that there was a need to incorporate effective strategies to facilitate an organ donation and transplantation module into the curricula.

Studies among nursing students conducted by Jones-Riffell and Stoeckle (1998:280) in the USA, Kim, Fisher and Elliot (2006a:580) in Korea and Zampieron, Corso and Frigo (2010:375) in Italy highlighted that these students lacked knowledge of organ donation and brain death and that they in fact did not have knowledge of the term 'brain death'. These studies further highlighted a need for the

inclusion of donor identification programs and knowledge on brain death in the nursing education curricula.

A study was carried out by Martinez-Alarcon, Rios, Lopez, Guzman, Lopez-Navas, Parilla and Ramirez (2009:2060) among nursing students studying for a nursing diploma at three universities in Spain. A questionnaire was used to assess their understanding of the concept of brain death. The study showed that 30% (216) of the nursing students lacked knowledge or had doubts about the concept of brain death. The researchers felt that there was a need to focus on this group of nursing students during campaigns so as to improve their knowledge (Martinez-Alarcon et al., 2009:2060).

It is imperative to address the failure of health-care professionals to identify potential organ donors or to assist in obtaining consent for organ donation from bereaved relatives. Davies (2002:36), for instance, conducted a study among the staff and nurses at various London teaching hospitals, which explored the impact of the attitudes of health-care professionals about being registered as donors on the availability of organs. The findings were that the doctors and nurses displayed no difference in their level of commitment to organ donation as a result of having similar attitudes. The major limitation of this study was that no ethnicity was considered, although it is well known that disparities exist between different ethnic groups.

In the USA, where the demand for transplantation far outweighs the supply of organs, Essman and Thornton (2006:2745) conducted a study among 537 first- and second-year medical students at a medical school in Ohio. From this study, it emerged that health-care professionals' knowledge, attitudes and behaviour were essential factors in creating a positive environment for organ donation. Several barriers contributed to a physician's willingness – or lack of willingness – to be involved in the organ donation process and lack of adequate knowledge about the process of organ donation. Despite the barriers that prevented physicians from becoming involved in the organ donation process, they were willing to donate their own organs. This study identified that the evaluation of the existing level of knowledge, attitude and comfort regarding the topic of organ donation was very important for successful organ donation to take place. The study further recommended that medical educators incorporate organ donation and transplantation content into the existing curricula to bridge the knowledge gap.

Edwin and Raja (2000:98) conducted a study at two medical colleges in India with 691 students in order to assess the awareness and attitudes of health-care professionals towards organ donation. The findings of the study were that the medical students lacked information on brain death and organ donation. As they are required by their profession to be able to certify brain death, a lack of knowledge in this area would thus limit opportunities for medical professionals to identify potential donors. Another concern was whether or not the medical professionals would be able to obtain consent from the relatives of a brain-dead donor when they lack knowledge on the area. Awareness campaigns using media and religious meetings, and the inclusion of brain death and organ donation information in the medical curricula were recommended.

Studies among medical students at a Turkish university by Akgün, Tokalak and Erdal (2002:2009) and at the Federal University of Bahia in Brazil by Dutraa, Bonfim, Pereiraa, Figueiredoa, Dutraa and Lopesa. (2004:818) reported similar findings of insufficient knowledge on organ donation and lack of knowledge of brain death.

A study was carried out by Canova et al. (2006:310) among Italian university students to investigate the understanding of and attitudes towards organ donation and transplantation through. The students were found to have positive attitudes towards organ donation and were willing to donate their organs after death. The study further stated that the success of this form of treatment and the demand for organs continued to exceed the number of donors at an accelerating rate. Studies undertaken by Mekahli et al. (2009:634) in the medical faculty at Lyon University in France and Demir, Sellimen, Yiridim and Kucuk (2011:1427) in Turkey among medical students and health-care professionals concluded that there was a greater need for information sharing about organ donation and transplantation in order to improve the knowledge of these categories of health-care providers.

A study by Rios et al. (2006:917) among the ancillary personnel at a Spanish hospital in Spain set out to explore attitudes of the personnel towards living liver donations. The study's findings were that the majority of the participants were in favour of donation to a relative, while the minority did not want to receive a living liver donated organ.

A Danish study by Bøgh and Madsen (2005:3256) evaluated the attitudes of nurses and doctors towards organ donation and reported that nurses exhibited less positive attitudes towards organ donation than doctors. They thus recommended education and training of intensive care unit professionals on how to inform and support the donor's relatives and to identify potential donors.

Studies in the UK (Collins, 2004:226), Turkey (Sonmez et al., 2010:1440) and Spain (Lopez- Montesinos, 2010:239) all noted that nurses and medical students had insufficient knowledge about the process of organ transplantation, and emphasised the importance of awareness campaigns, appropriate information and curriculum content.

Two studies by Alsaied et al. (2012:1304) and Chung et al. (2008:278) among health-care professionals in Qatar and the University of Hong Kong respectively sought to explore attitudes and knowledge towards organ donation; these revealed that, even though a proportion of the participants demonstrated positive attitudes towards organ donation, there was still a lack of knowledge about the topic, and as such public education was recommended to correct misconceptions.

A South African study by Sobnach, Zengin, Ongel, Kisioglu and Ozturk (2011) among medical students at the University of Cape Town with regard to their knowledge of organ transplantation concluded that they had limited knowledge. This was attributed to the medical curriculum, which did not adequately prepare future physicians to contribute towards reducing the organ shortage in South Africa. Recommendations by the researchers were that medical educators integrate a formal transplantation training module in the undergraduate medical curriculum and that organ transplantation be regarded as a public health issue. A survey at the University of Cape Town by Mojela, Hairwadzi and Hift (2006), investigated attitudes towards organ donation and factors influencing these among 151 second- and third-year medical students. The study findings were that there were few registered donors whilst the majority considered registering as organ donors. The researchers also found that age, gender, ethnicity and religion could not be associated with a person's decision to donate or not.

Prottas and Batten (1988:645) pointed out that medical/health-care professionals were a strong link in organ procurement, since they have a responsibility to identify suitable candidates for donation, declare death and inform families. The research

findings further emphasised the fact that more educational efforts in organ procurement should be aimed at nurses because of the high levels of support found among them, which could be used to promote organ donation.

The literature reviewed highlights that information offered to the public by nurses is able to influence public opinions. Nurses therefore have an important role to play in influencing patients and relatives to donate organs. Their ability to exert such influence will contribute to increasing organ donation rates.

Having acknowledged that nurses are more frequently in direct contact with patients than physicians and that the skills of nurses can be applied to campaigns for organ donation, it becomes all the more important to address the nurses' lack of knowledge of organ donation and brain death. Nurses are well known for their role in supporting patients and their relatives in health-care settings and in communities. It is therefore important that they be properly empowered with knowledge of organ donation and transplantation in order to contribute towards reducing the organ shortage.

A study was conducted by Siminoff Gordon, Hewlett and Arnold (2001:71) at nine trauma hospitals in South-western Pennsylvania and North-eastern Ohio to explore factors associated with the decision to donate among families of potential organ donors. Health-care professionals were identified as poor judges of people wishing to donate. Health-care professionals' incomplete and/or inaccurate information and bias about the organ donation process moreover limited their ability to obtain consent for organ donation. The study limitation was that non-donor families did not participate in the study and that it was likely that those who did not participate were the ethnic minorities who could in fact have taken part in the study. Given the various factors that influenced organ donation in different population groups, Siminoff et al. (2001:71) concluded that there was no single endeavour that would improve organ donation rates.

We have looked at the attitudes of health-care providers towards organ donation and transplantation as it has been noted in some studies that the attitudes of health-care providers are influential to the attitudes of their patients and families. Our focus in the next subsection is on organ shortage and beliefs about organ donation.

2.3.7 *Organ shortages and beliefs about organ donation*

The shortage of organs for donation is a worldwide problem. The rate of organ donation and transplantation is far below the demands for organs due to various factors that influence the ability and willingness of people to donate organs (Siddiqui, Nizami, Raza, Ali, Bikak, Siddiqui, Khan & Mustafa 2012:544). A 2004 study amongst the Muslim community in Saudi Arabia, for instance, showed that the medical community lacked training and information on organ donation and transplantation. Lack of training and information on organ donation and transplantation contributed to shortage of organs in Saudi Arabia. Although Saudi Arabia had made some formal resolutions that permitted tissue and organ transplantation, they were still faced with low rates of organ donation. Recommendations from this study included intensifying the training of personnel involved in organ donation in order to improve the organ donation rates and their beliefs (Shaheen & Souqiyyeh, 2004:550).

Verheijde, Rady and McGregor (2007:906) indicated that the organ shortage was a serious public health crisis in Europe, even more serious than poverty and lack of access to primary health care. This area of research thus needs prompt attention.

Despite the increasing worldwide need for organs, many people remained uncomfortable with the idea of organ donation. This tendency has been attributed to misconceptions, lack of information and various beliefs regarding transplantation. Work by Rumsey, Hufford and Cole (2003) has shown that the presence of positive and negative attitudes regarding transplantation can determine a person's commitment or otherwise towards organ donation. The authors concluded that religion alone did not influence a person's willingness to donate. Rather, the positive attitude of the person was responsible for this willingness. Religion could however be a factor in creating positive attitudes towards organ donation and the researchers were of the opinion that religious leaders had a significant influence on one's decision to donate or not. Suggestions put forth by the study pointed to religious leaders and the religious community, which were believed to be in a position to support organ donation using theologically based information in order to reduce organ shortage (Rumsey, Hurford & Cole, 2003:2845).

In addition to the shortage of organs, which is a major problem globally, there is also a need to ensure quality in the processes of organ donation and transplantation.

The European Commission (2007) suggests that the number of organ donors must be accompanied by high-quality safety standards and improvements in the efficiency and accessibility of transplantation systems. This is supported by the guidelines of the National Department of Health (DoH) in South Africa, which it has set for the provision of dialysis and transplantation. The Department of Health has stated in the guidelines that there must be a selection process with regard to who should be given dialysis or receive an organ for transplantation, as these intervention are costly (Rayner, 2003:673).

The European Commission for Public Health (2008) has made several recommendations that are vital in promoting the availability of deceased and living donors across the European Union and Africa:

- To increase the supply of organs;
- To enhance transplantation systems and ensure the quality and safety of procedures; and
- To improve knowledge and communication regarding organ donation and transplantation issues, both among health professionals and the general public.

In India, despite the Indian Parliament having passed the Human Organ Transplantation Bill in 1994, there remain considerable problems concerning organ donation and a gross shortage of organs in that country. Reddy, Gurela, Khazanchi, Bhadwaji, Aggarwai and Mandai (2003:18) reported in their study that doctors, patients, the public and nurses showed lack of knowledge and superstitious beliefs, which were largely responsible for the organ shortage. The superstitious beliefs generated mistrust and fear in the minds of the groups they investigated, as they believed that after death one joined one's ancestors and that the deceased would have to look after the family left behind. Doctors and nurses were of the opinion that organ donation was not their professional responsibility. The researchers thus concluded that continuous education and motivation was needed, not only for the public but also for health-care professionals.

Medical personnel are said to be reluctant to approach families of brain-dead patients in order to obtain permission to refer them to the transplant centres. This can be attributed to various reasons like religious, cultural beliefs as well as lack of knowledge on the processes of organ requests. There are about 14,000 road death

accidents every year on South African roads, and if organs for donation were indeed available from all those individuals, it should mean that the waiting lists of patients waiting for transplants would be significantly shortened (Millar, 2011). But this is not the case.

Having looked at the organ shortage and beliefs about organ donation it is necessary to look at organ procurement/ commercialisation as one other way that can be explored to improve organ shortage. In the next subsection focus will be on organ commercialisation.

2.3.8 Commercialisation of organ donation

An increasing concern worldwide has been the commercialisation of organs for donation within vulnerable population groups. This concern is attributed to people's attitudes towards organ donation worldwide, due to many reasons, involving a mixture of myths, incorrect information and ignorance (Cantarovich, 1999:2958). It is now estimated that transplantations from such commercial transactions account for about 10% of global transplants (Watts, 2007).

In Pakistan, for instance, organ commerce is common and the selling of kidneys is rife among the large, illiterate and poor population (Naqvi, Mazhar, Zafar and Rizvi 2007:934). It is reported that there was a growing problem of selling organs that is targeted to the poor, prisoners as well as refugees (Steering Committee of the Istanbul Summit, 2008:1227).

A study by Surman, Saidi and Burke (2008) was undertaken to address the practical considerations of the legalisation of organ sale in the USA. The study showed that there was an increasing interest in compensation for living organ donation, but further research was necessary to assess the attitudes of stakeholders regarding the proposed changes in transplantation policy.

Reddy et al. (2003) in a study focusing on patients, the public, nurses and doctors in India reported that the majority of participants were against commercial activity in organ transplantation.

South Africa also has legislation in place that prohibits the sale of organs for donation and transplantation. However, the legislation is not as authoritative as it should be and realistically there is indeed some trafficking in a country that practises

first world medicine at third world prices (Khoza, 2009). Organ donation in South Africa is generally done altruistically, however, that is, it benefits the other person without financial compensation paid to the donor or his/her family.

However, organ trafficking has also been reported in South Africa. A “black market” as referred to by Rohter for trafficked organs was first uncovered in 2003 (Rohter, 2004). It was found that organ donors were recruited mainly from Brazil, and that the organs were harvested in hospitals in Durban, Johannesburg and Cape Town and then sold to recipients in Israel. Khoza (2009) blames legislation in South Africa for being too relaxed, and thus allowing the country to be targeted for organ sales and for participating in the unethical and illegal sale of organs for commercial gain. In the USA, in contrast, there have been some legislative advances, with clearly defined codes of conduct for health-care facilities and professionals to ensure that the transplanted organs have been legally obtained, as set down in the laws of the country (Tazzen & Jafar, 2009:1145). Slabbert and Oosthuizen (2007:196) investigated the shortage of organs in South Africa and the possible sale of organs. They found that inadequate legislation, as well as the current system of organ procurement contributed to the organ shortage and illegal sale of organs.

The World Health Organization (WHO) has some guiding principles for Human Organ Transplants that prohibit the commercialisation of organs and that emphasise voluntary donation (World Health Organization, 2010). Organ commerce is legally forbidden, because it is realised that there is a need to protect poor people from the exploitation inherent in such organ sales. Vulnerable populations include illiterate and impoverished individuals, undocumented immigrants, prisoners and refugees. The benefits to donors who sell their organs are not clearly understood, especially if the reason for donation is solely for monetary gain.

2.4 Summary

This chapter has looked at the value of organ donation, factors that influence organ donation paying attention to cultural, religious as well as emotions. Time pressure and knowledge that the relatives of a deceased would need to have when request for harvesting organs are made. Public views, their lived experiences and the influence of the family in decision making of an individual to consent to donate as well as the attitudes of the health-care providers were also looked at. Lastly, the

organ shortage, beliefs about organ donation and organ commercialisation were also looked at.

The shortage of organs for donation is a direct consequence of a small donor pool, which is partly due to the unwillingness of people to donate their own organs after death, as well as of family members to consent to donating the organs of their deceased or brain-dead relatives. A lack of knowledge and negative attitudes towards organ donation by the general population as well as by health-care workers may be the major contributing factors to this unwillingness to donate.

Transplantation and organ donation are mostly done for the purposes of improving people's lives and to save the lives of those whose organs are failing. It has been noted from the literature reviewed for this study that, although much effort has been made to improve donation rates, there is still a shortage of organs for donation. Many factors have been identified that are associated with the reluctance of individuals to donate their organs. Health-care workers clearly have an important role in increasing organ donation rates, since they have close contact with the patients and relatives of deceased patients.

However, their lack of knowledge surrounding organ donation and transplantation has been the leading reason why health-care workers have been unable to contribute to improving the organ donation and transplantation rates. There is a dearth of literature addressing the attitudes and knowledge of undergraduate nursing students in Africa. It is therefore imperative to research their understanding of organ donation and transplantation and to ascertain what improvements could be made to the current situation. Whilst there is vast literature internationally on the topic of organ donation and transplantation, the literature reveals a knowledge gap in South Africa. Nurses were found to have poor attitudes towards the topic, as compared to technicians (Alsaied et al., 2012:1304).

In the next chapter, we will look at the methodology which includes research design, background of the study setting, population studied, sampling, data collection, brief analysis of results, reliability and validity, ethical considerations and potential risks and benefits to the respondents.

CHAPTER 3: METHODOLOGY

3.1 Introduction

According to the literature reviewed in the previous chapter, there is a worldwide shortage of organs for donation, which may be due to various reasons. One of these is the reluctance of people to donate their organs, either during their lifetime in the case of kidneys and liver lobe or after death. Lack of knowledge and negative attitudes towards organ donation by the general population and health-care workers are major contributing factors to this unwillingness to donate. Bapat, Kedlaya and Gokulnath (2010) identified a lack of knowledge of the legal and procedural details of organ donation as another contributing factor to the shortage of organs for donation.

This chapter discusses the methods employed to explore the attitudes and knowledge of the Lilitha College of Nursing (Mthatha main campus) undergraduate student nurses towards organ donation and transplantation. The research design and background of the study setting, the target population, the data collection methods and tools used, and the relevant issues identified in the data analysis are presented herein.

3.2 Research design and background of the study setting

The study was cross-sectional in nature amongst the pre-registration nursing students it involved administering a questionnaire to explore the knowledge and attitudes of a sample of student nurses at a particular college in the Eastern Cape towards organ donation and transplantation. The cross-sectional design method was preferred, as the study involved the comparison of the responses of four different groups from all the levels of training of the nursing student population. The study aimed to address three aspects: the willingness of the student nurses to consider organ donation for themselves and for their patients the factors that affected their decisions; and a comparison of the various groups' responses. Particular attention was paid to the factors that might lead to them donating their own organs, either before or after death; it was also examined whether perceptions to donate differed by student cohort.

The variables of interest for the study were the demographic profiles, knowledge of organ donation and transplantation, and attitudes towards this. The particular aim of the study was to determine if demographic variables were associated with the students' attitudes towards and knowledge of organ donation and organ transplantation.

This design, though suited to the research question, has some limitations. Results from a cross-sectional design present a limited picture of the area being studied, so it is referred as a 'snapshot' (Leighton, 1953). Descriptive studies are not able to draw conclusions from data collected in terms of the relationship between variables, for example cause and effect (Jackson, 2011).

With regard to the background of the study setting, Colleges of Nursing, both public and private, and universities across South Africa, offer pre-registration nurse training. In the Eastern Cape, nursing training before 2004 was offered in four colleges, namely, Ciskei Nursing College, Transkei Nursing College, Frere Nursing College in East London and Shirley Crib Nursing College in Port Elizabeth, as well as at the three universities in the province. In 2004, these four colleges were amalgamated and renamed the Lilitha College of Nursing. The formerly separate colleges became campuses of the amalgamated college. Lilitha College of Nursing is made up of five main campuses, with a satellite campus attached to each main campus. All the main campuses offer post basic nursing programs and pre-registration programme a four-year comprehensive course leading to registration as a Nurse (General, Psychiatric and Community) and Midwife. The Mthatha Main campus was selected for the study. This campus offers the four-year diploma as well as two post-basic courses. The total pre-registration nursing student population in 2012, the year of this research, was 456 students.

3.3 Target population

The population under study consists of primarily isiXhosa-speaking preregistration nursing students undergoing training and education at the Umtata College of Nursing in the Eastern Cape Province, as indicated in Section 3.2.1. The majority of the nursing students who are based at Mthatha Main campus come from deep rural areas of the Eastern Cape Province.

3.3.1 Sampling

A convenient stratified sampling method was used to obtain a sample size of 268 drawn from a 456 potential population of nursing students undergoing the four-year program leading to registration as a Nurse (General, Psychiatric and Community) and Midwife (in terms of R425 of 22 February 1985 as amended). All the nursing students met the sampling criteria of being nursing students registered in the campus in 2012 and all were able to read and write in English. The student nurse population of 456 was deemed large enough to enable the recruitment of the required sample size of at least 268 respondents. The sample size of 268 was based on the formula for estimating the margin of error for the sample size.

The distribution of students registered at various levels in the 2012 academic year is indicated in Table 2 below.

Table 2: Pre-registration nursing students at Lilitha College in 2012

First Year	Second Year	Third Year	Fourth Year	Total Number of Students
106	138	112	100	456

3.3.2 Inclusion and exclusion criteria

The following criteria were used when choosing the sample of students for the study:

- Inclusion criteria: All pre-registration nursing students registered for the Diploma in the nursing program at the Mthatha Main Campus who could read and write in English. English is the language of tuition and students are expected to be proficient in English.
- Exclusion criteria: All pre-registration nursing students registered for the Diploma in the nursing program at the Mthatha Main Campus who were either on vacation leave, in clinical placements, or on sick leave on the day when the questionnaire was distributed. Those that participated in the pilot study were also excluded.

Table 3 below sets out the numbers of students excluded from the sample for each year of study.

Table 3: Number of students excluded per year of study

First Year	Second Year	Third Year	Fourth Year	Total Number of Students excluded
29 (24 + 5 participated in pilot study)	59 (54 + 5 participated in a pilot study)	37 (32 + 5 participated in a pilot study)	20 (15 + 5 participated in a pilot study)	145 (125 + 20 participated in a pilot study)

On the day when the questionnaires were distributed, there were 311 pre-registration students attending classes at the college. One hundred and forty-five were not present due to one or more of the reasons indicated above, and were thus excluded from participation. Sixty-seven students were drawn from each year of study, with the final number across all four years being 268. The rationale for choosing 67 at each level was to ensure consistency in terms of the number of participants across all four years. In order to arrive at this sample size, and to make sure that all had a fair chance of being included in the study, the student nurses were requested to count from 1 to 2, and all those who had counted as number 2 were selected, until the required number was reached per level.

Stratified convenient sampling implies that the participants are selected because of their accessibility and proximity to the researcher. The study population was stratified according to the nursing students' year of training from the first to the fourth year of study (Grove, Burns & Gray, 2013: 359).

The researcher grouped the eligible nursing students into years of study (see Table 4 below).

Table 4: Number of students per year eligible for inclusion

First Year	Second Year	Third Year	Fourth Year	Total Number of Students eligible
77	79	75	80	311

For a precision of 0.05, 95% confidence interval, the required sample calculation was as follows:-

$$N = \frac{p(1-p)z^2}{d^2}$$

P = prevalence = 0.775

Z = 1.96 (for 95% confidence of normal distribution)

D = 0.05 (precision)

N = 267.95

N = 268

Calculation as follows

0.775 (1 - 0.775) 1.96 x 1.96 ÷ (0.05 x 0.05)

0.775 (0.225) x 3.8416 ÷ 0.0025 = 267.9516

267.95

268

Having considered the sample size, 0.05 was the margin of error (default) with a 95% confidence. The margin error of 0.05 has a sample size of between 200 and 500 respondents with a confidence interval of 95% (Niles, 2006).

3.4 Data collection

3.4.1 Data collection instrument

A questionnaire was selected as the best data collection method for this study, as the aim was to gather quantifiable information with less bias than an interview (Grove, Burns & Gray, 2013:425). The questionnaire comprised nine pages; it was felt that this was not excessively long and requiring too much time, since the majority of the questions required responses of “yes”, “no” or “undecided”. A self-administered questionnaire was used to collect the data, and it did not require any form of identification. The questionnaire was in English (see *Appendix A*); it was pre-tested in a study conducted at the University of Cape Town (Mojela, Hairwadzi & Hift, 2006) and was also piloted in the population to be studied. The questionnaire was adapted from a study that was conducted on second and third year medical students to study the attitudes towards organ donation and factors influencing. No changes were introduced to the questionnaire except for adding open-ended questions to enable the participants to add their opinions and express their views.

This was also intended to expand the sometimes limited information obtained from a closed-ended questionnaire format.

The questionnaire was in English, as the respondents were attending a tertiary education institution where English was the language of instruction, and where all students were expected to communicate in and understand English. The questionnaire in an alternative language was thus unnecessary. The information sheet was available in isiXhosa on request. The questionnaire comprised the following sections:

- Demographic information of the respondents (including age, sex, ethnicity, religion and year of study, but excluding their names etc)
- The respondents' knowledge of organ donation and transplantation
- The respondents' attitudes towards organ donation and transplantation
- Selected general medical background information.

These sections were deemed important because the general medical information would influence the individual's attitude towards organ donation and transplantation. The demographic variables are important to examine in any research for the purposes of describing the sample and also to enable generalisation of the findings (Grove, Burns & Gray, 2013:154).

3.4.2 Data collection process

Prior to data collection, a meeting was held with the head of the campus and it was agreed that, on the day of the pilot, after the assembly, students would be addressed and informed by the researcher about the purpose of the study and that they would be allowed to ask questions where they needed clarification.

The nursing students were accordingly gathered at the assembly point and then later in their respective classrooms. The sampled groups were asked to proceed to the reception, where the questionnaires were kept for distribution. The pre-registration students were asked to collect the questionnaires from the reception, after being given information letters and the consent forms. The researcher instructed the participants to drop the consent forms in a separate box, separating them from the questionnaire to ensure anonymity. The questionnaires were grouped according to level of study, since these were coded accordingly, and the participants

were told to collect them as per their level of study. The boxes were also labelled by levels of study.

The process of administering the questionnaires took place in the college after a study block for summative evaluation. 268 questionnaires were distributed and 182 were returned. The returned questionnaires were coded by the year of study and the number of respondents. The questionnaire submission box was made available for the participants to submit their questionnaires in the afternoon of the same day.

Sixty-seven questionnaires were distributed to each year group. The return rate is presented in Table 5.

Table 5: Return rate of questionnaires

First year	Second year	Third year	Fourth year
49 (73%)	40 (61%)	28 (43%)	60 (89%)

This method was chosen to address the possibility of non-return of the completed questionnaires. Participants were asked to collect and complete the questionnaires anonymously and then drop them off into a locked box outside the receptionist's office close to the researcher's office.

The questionnaires were counted and checked. The statistician and his research assistants captured the information into an Excel spread sheet. Each variable was coded. After capturing, the statistician validated the data before the analysis. Missing data were excluded where it was noted to be missing during the analysis and interpretation process. It was excluded as the researcher's assumption was that the respondent had chosen not to respond, or he/she did not understand the question or he/she had missed the question.

3.5 Analysis of the results

The data was captured in Excel and analysed using SPSS (Statistical Package for Service Solutions) Version 21. Grove, Burns and Gray (2013:538) describe two major classes of statistics, namely descriptive and inferential statistics. These are

computed statistics with which data can be analysed. These two statistics are thus discussed in Section 3.5.1 and 3.5.2 below, respectively.

3.5.1 Descriptive statistics

Descriptive statistics reveal characteristics of the sample and also describe the variables (Grove, Burns & Gray, 2013:538). Descriptive analysis methods do not allow any conclusions to be made and are limited only with regard to the interpretation of the data collected. The descriptive statistics enable data to be presented in a meaningful and summarized way. Data is presented in the form of tables, cross-tables, pie charts and bar charts. Due to the quantitative nature of the variables explored, mostly categorical responses are reported in percentages, both on the tables and graphs.

3.5.2 Inferential statistics

Inferential statistics draw conclusions based on certain hypotheses. In this study, the focus was on the investigation of the attitudes towards and knowledge of the population of student nurses towards organ donation and transplantation. A convenience sampling approach was used so that conclusions drawn from the findings of the sample could be inferred or applied to the entire population of nurses. Because the data was mostly categorical or quantitative in nature from a single population (that of the nursing students), the chi-square goodness of fit test was used to draw inferences. The aim was to determine whether the sampled group of nurses' responses was consistent with that of the hypothesized population. The significance level was put at 5%, where the hypothesis tested would be rejected, if the chi-square value was below 0.05, and where it could not be rejected, if it was found to be above 0.05. The full details of the variables explored are discussed in Sections 4.5 to 4.12.

We have described the two statistical methods that were used in this study and now we are paying attention to the cross-tabulations that represent categorical data.

3.5.3 Contingency tables (cross-tabulations)

Contingency tables (sometimes referred to as cross-classification tables) represent categorical data in columns and rows, with the independent variable on the columns

and the dependent variable on the rows, and are used to describe the relationship between two quantitative variables.

The extent of the relationship between the variables is measured by applying the Chi-square test of association, with the significance level set at the 5% significance level referred to as the p-value of 0.05 in this study.

3.5.4 Demographic variables (Questions 1 to 7, pages 1 to 2 of Appendix A)

Frequency tables, cross-tabulations and graphs were used to analyse the demographic variables. A summary of the demographic variables was of utmost importance since at a later stage, they would be used in the statistical inference to find out whether or not they influenced certain behaviours. Rayner (2003) also supports the idea that gender, age and race are very important in South Africa for historical reasons. Reporting is in percentage form. Graphs in the form of pie charts and column graphs are used to describe the distribution of the demographic variables (see Section 4.2).

3.5.5 Prior knowledge on organ donation (Question 13 and 18, pages 3 and 5 of Appendix A)

It is believed that prior knowledge may influence the decision or the attitude of someone towards organ donation. Chi-square test for significance was used to validate truth of the claim. The results are presented in table form (see Table 6).

3.5.6 Attitudes towards organ donation

Questions 8, 9, 10, 11 and 12 of the questionnaire attempted to explore the attitudes of the respondents towards organ donation under the following circumstances:

- Cadaveric donation
- Living donation to a relative,
- Or living donation to a stranger for financial benefit.

Question 8 responses were captured in a bar chart. From this, it is easy to see how the responses were spread across the different organs in the form of percentages (see Figure 6-8).

Question 9 responses are presented in Figure 7. Question 10 was about donating one's organ or organs to a stranger and the responses are presented in percentages in Figure 8.

3.5.7 Attitudes towards organ transplantation

In Question 11 of the questionnaire, respondents were asked to indicate if they would accept organs donated to them by persons from a different religion, gender or clan, if they were required to undergo a transplant. The responses are presented in table format as percentages (see Table 10).

3.5.8 Responses on consent to donate

The sample was dominated by isiXhosa-speaking Africans. In the African culture, authority traditionally lies with the older people and family ties are important. Individuals are guided by family rules or decisions. This was measured in Question 12 and the responses are reported in Table 7.

3.5.9 Medical history of the student nurses

Organ donor criteria require potential donors to be healthy hence the need for the researcher to investigate the medical history of the respondents. Questions 15 and 16 responses were analysed in a column chart in Figure 10.

3.5.10 Responses on professional capacity

Question 14 focused on their role as nurses to influence organ donation among individuals and the descriptive statistics are presented in the column chart in Table 26.

3.5.11 Responses on year of study

The researcher was amongst other things interested to know whether the respondents' opinions on the decision to donate would be influenced by their year of enrolment or not. The summary of the distribution was presented in a pie chart in Figure 11.

3.6 Prior knowledge associations on organ donation and transplantation

3.6.1 Association between registered donors and organ donation

The chi-square test was used to test whether the prior knowledge of respondents has an impact on their attitude to donate or not to donate. The aim was to see whether male respondents had better prior knowledge than females, whether prior knowledge differed by age group, whether belonging to certain ethnical groups meant that one was more likely to acquire better prior knowledge than those who belonged to other ethnical groups, and whether respondents who belonged to a certain religion were likely to acquire such knowledge than nurses belonging to other religious groups (see Section 4.5).

3.6.2 Association between knowledge and organ transplantation

Question 13.12 asked the respondents whether they had knowledge of someone who had received an organ or donated one an organ transplant or not. The aim of this question was to understand the association between the knowledge of the student nurses and their attitudes towards organ transplantation.

Firstly, contingency tables were drawn with the columns representing the independent variable (knowledge level) and the rows representing the dependent variable viz. organ transplantation, whether it is to a different religion, gender or clan. Secondly, the chi-square test was used to test whether the knowledge acquired was significant or not in influencing the decision of the student nurses in accepting organs or donating their own.

3.6.3 Association between knowledge on organ donation and attitudes

The main objective of the study was to understand the attitudes and knowledge of the undergraduate nurses towards organ donation and transplantation, based on the assumption that a knowledgeable person would make better informed decisions than a person with limited or non-existent knowledge. Contingency tables were thus drawn, with the columns representing the independent variable (knowledge) and the rows the dependent variable (donating an organ, whether it is through selling it or voluntarily donating with no expectations of remuneration). The chi-squared test was used to analyse the categories of responses. The association between variables

was determined by either accepting or rejecting the hypothesis, based on the 5% significance level (p-value of 0.05). In this study, it was hypothesised that the knowledge of the nurses towards organ donation might influence their decision whether to donate or not to donate an organ in the future.

3.7 Demographic background

3.7.1 Association between student demographic background and attitude towards organ donation

Questions 8, 9, and 10 were cross-tabulated against the demographic variables to see if they would influence the decision of the student nurses to donate their organs. The chi-square test was then used to measure the extent of the association between these variables at the 5% significance level. The results are presented in Sections 4-6 to 4-12.

3.7.2 Association between student demographic background and medical history

As in Section 3.3.3 the responses of the respondents as to whether they suffered from some chronic medical illness were cross-tabled against responses gathered from In respect of Questions 15.1 and 15.3 results are presented in section 4.11.4.

3.7.4 Association between the demographic variables and attitudes of the student nurses towards organ transplant

In respect of Question 11 of the questionnaire, the responses were presented in table format as percentages (see Table 13 -18).

3.7.5 Association between the demographic variables and consent to donate

In this section, the year of study was cross-tabulated against consent to organ donation and transplantation. The chi-squared test examined the extent of association between the level of training and attitude.

3.7.6 Association between demographic variables and medical history on attitude towards organ donation

The responses gathered from Questions 15.1 and 15.3 were cross-tabulated against responses with regard to cadaveric and living donation of Questions 8, 9 and 10,

specifically focusing on the kidney and liver. The results are presented in Section 4.5.5

3.8 Medical history and knowledge on organ donation

3.8.1 Association between medical history and knowledge on organ donation

To further explore the impact of medical history on organ donation, Question 15.1 was cross-tabulated against Question 13.12, which asked the students whether they knew of someone who had received an organ transplant or not. This was repeated for Question 18, where students had to indicate whether they were registered as organ donors or not.

Contingency tables were thus drawn, with the columns representing the independent variable (knowledge level) and the rows the dependent variable organ transplantation, and specifically whether it was to a different religion, gender or clan. The second chi-squared test was used to test whether the knowledge was significant or not in influencing the decision of the student nurses.

3.8.2 Association between medical history and attitude towards organ donation

The responses gathered from Questions 15.1 and 15.3 were cross-tabulated against the responses of Questions 8, 9 and 10. The results are presented in Section 4.5.5.

3.8.3 Association between medical history on organ transplantation and knowledge

As in Section 3.3.3, the responses gathered from Questions 15.1 and 15.3 were cross-tabulated against Questions 11 and 13.11 to explore possible associations (see Table 12). The results are presented and discussed in Section 4.5.5

3.9 Year of study and selected variables

3.9.1 Association between year of study and knowledge on organ donation

The year of study was cross-tabulated against the consent towards organ donation and transplantation. It was assumed that the level of training was likely to change the attitude of an individual. The chi-squared test was used to test the extent of association between the level of training and attitude.

3.9.2 Association between year of study and attitude towards organ donation and transplantation

The research covered four areas, regarding attitudes towards organ donation and transplantation; whether the nurses would be willing to donate if they were to die tragically; whether they would be willing to donate to their relatives under normal circumstances; whether they would donate to strangers for compensation; and whether they would accept an organ from persons who came from a different religion, gender and clan. Respondents had to indicate what best would suit them with either a “yes” a “no” or “undecided” response.

3.9.3 Association between year of study and consent towards organ donation

The association between consent and year of study sought to explore whether there were differences in opinions in giving of consent by year of study. The hypothesis was that there was no difference between the nurses by level of study on how they relied on their church elders, relatives and spouses in deciding to donate. The alternative hypothesis was that there might be differences between the four groups. A cross-tabulation of the year of study and consent was done in Section 4.12. However, for ease of analysis, only a summary of the “yes” responses was presented. To validate the claim, the chi-square test was performed at the 5% significance level (see Table 39 -41).

3.9.4 Association between year of study and medical history

Three questions focused on understanding the relationship between year of study and medical history. Cross-tabulations were used to assess the associations between the year of study and the medical history at the 5% significance level. However, for ease of analysis and reading, only a summary of the “yes” responses was presented. The results are discussed in Section 4.12.3. Table 42

3.9.5 Association between year of study and professional capacity towards organ donation and organ transplantation

In order to assess possible associations existing between level of study and professional capacity, two questions are focused on, viz. whether the students would encourage patients and the community to register as organ donors, and would refer patients who were brain-dead to transplant teams for organ harvesting.

The hypothesis was that there were no differences in the students' opinions with regard to their decisions to encourage patients, communities and their relatives to be organ donors or to accept organs. This claim was tested against the alternative hypothesis that differences did exist. The 5% significance level was used to validate the claim. Cross-tables of the students by year of study and the responses to the questions, presenting only the "yes" responses, were used for ease of analysis and flow of information (see Table 43).

3.10 Reliability and validity

The instrument was regarded reliable for this study, as it had been used successfully in a study among medical students in the University of Cape Town (Mojela, Hairwadzi & Hift, 2006). The pilot study ensured that the questions were appropriate and clearly understood by the pilot group. The pilot study was conducted to check whether the instrument measured what it was supposed to measure and to identify ambiguous question that might have yielded unclear responses from the participants. There was no evidence of ambiguity and the responses were in line with what was asked. Mojela, Hift and Hairwadzi (2010) did not mention the reliability of the instrument, as my instrument was adapted from theirs. But having been used in the pilot study of this study, it could be regarded as a reliable instrument. For an instrument to be reliable, it must have the power to detect significant relationships or differences in the population under study. An instrument is further regarded as a reliable instrument when it is used in the same population and yields the same results.

The validity of the instrument was ensured because the opinions that it was seeking were from the respondents who were in possession of the knowledge. The responses from the respondents in the pilot study did not require the questionnaire to be refined or adjusted. Consistency in the manner in which the questionnaires were distributed also promoted validity. The questionnaires were self-administered and all the students were asked to return them that same day. There was no mix of methods of administering the questionnaires (Grove, Burns & Gray, 2013:422).

3.11 Pilot study

A pilot study was conducted with 20 students, who were not included in the main study. The purpose of the pilot study was to conduct a preliminary test of the data

collecting instrument, whilst trying to identify errors and unclear questions. Five students from each year of study were approached to participate in the pilot study. Once they had given their consent, the aim of the pilot was further explained to them in their classrooms. The questionnaires were distributed to the pilot group in the morning and they were asked to return them in the afternoon. The questionnaire was selected as the best data collection method for this study, as the aim was to gather quantifiable information with less bias than would have been possible with an interview (Grove, Burns & Gray, 2013:425). The questionnaire comprised nine pages, which was regarded as not too time-consuming, since the majority of the questions required only responses of “yes”, “no” or “undecided”. Students who participated in the pilot study were excluded from the study. No changes were made to the data collection instrument following the pilot.

3.12 Ethical considerations

Ethical approval was obtained from the University of Cape Town’s Faculty of Health Sciences Human Research Ethics Committee – HREC REF: 620/2012 (Appendix G). Permission to conduct the study was obtained from the Head of the College of Nursing. Written informed consent was obtained from the respondents, after they had been given an opportunity to read the information and to have their questions answered to their satisfaction. The respondents were asked to return the consent forms and to drop them separately in a box provided for them so as to maintain anonymity. Ethical principles were adhered to, as stipulated in the Declaration of Helsinki (World Medical Association, 2008:1-6). With respect to the rights of persons participating in research, the Declaration of Helsinki states that the potential subject must be informed of the right to participate voluntarily, and of the right to refuse to participate in the study or to withdraw consent to participate at any time without reprisal. It is further required by the Declaration of Helsinki that the researcher has the duty to safeguard and promote the health of respondents (Puri, Suresh, Gogtay & Thatte, 2008).

3.12.1 *Autonomy and confidentiality*

Autonomy of the participants was ensured by giving the participants the choice of participating voluntarily. Written informed consent was obtained. The participants were informed in the consent form that non-participation would not prejudice their academic progress. The aims and anticipated benefits and risks, if any, of the study

were explained in the informed consent letter (Appendix C). The respondents were informed of their rights to withdraw from the study at any stage without prejudice.

Signing of the consent form was considered sufficient for evidence of voluntary participation. Confidentiality was maintained, and the information letter given to the participants confirmed that the information given would be used for the purposes of the study only. No personal information could be linked to individual respondents, and questionnaires could not be linked to the respondents. Cross-classification of questionnaires was done by levels of study to protect the identities of the respondents. The data was kept in a secure place (under lock and key in a steel cabinet) in the researcher's office until taken to the statistician who also had locked cupboards; it was available only to the researcher, the statistician and his assistants.

3.12.2 Justice

Justice, in terms of the fair and non-discriminatory selection of participants for the study, was promoted. The responses given by participants were respected and treated as valuable information, and incorporated into the data analysis and reporting.

3.12.3 Anonymity

No names were required to be provided on the questionnaires. The questionnaires were coded by year of study and consecutively numbered.

3.13 Potential risks and benefits to the respondents

Some of the participants, depending on the individual's values and beliefs, might have felt emotionally affected, especially if the topic had touched on their previous experiences with respect to organ donation and transplantation. Counselling was available for those requiring such services and a referral system to the relevant specialists was put in place. This information was included in the information sheet given to participants at the beginning of the study.

3.14 Summary

The methodology, background of the study setting, population studied sampling, data collection and brief data analysis, ethical considerations, validity and reliability

of the data collecting instrument as well potential risks were described. This cross-sectional survey of knowledge and attitudes of pre-registration nursing students to organ donation was conducted in a nursing college in the Eastern Cape Province. 268 self-administered questionnaires were distributed and 182 returned. All ethical considerations were adhered to (Declaration of Helsinki, 2008). In the following chapter, the results of the study are presented.

CHAPTER 4: DATA ANALYSIS AND PRESENTATION OF RESULTS

4.1 Introduction

This chapter discusses the results of the questionnaire, which was completed by the pre-registration nursing students at Lilitha nursing college in the Mthatha area, with regard to their knowledge and attitudes towards organ donation and transplantation.

Firstly, as explained in Section 3.5, descriptive statistics in the form of graphs and tables were used to summarize the demographic variables of the students, sorted according to year of enrolment. The results looked at four areas of focus:

- whether the attitude of the students towards organ transplantation was positive or negative;
- whether the consent to donate was dependent on or independent of certain variables;
- whether the medical history of the students influenced their decision to donate or accept an organ;
- whether the professional capacity of the students played a role in them influencing their patients to donate or accept organs;
- whether there were differences in the proportion age, gender, ethnicity and religion of the students in terms of donating and accepting an organ.

Secondly, inferential statistics were used to test for possible differences and associations between the demographic variables and the variables of concern, viz. knowledge, attitude, medical history, giving consent to donate professional capacity and year of study. The chi-square test was used to test the significance of the associations between these variables and the demographic variables at the 5% significance level. The results are presented in the following categories: demographics, religious practice, personal attitudes and knowledge of organ donation, medical history and donor registration. The following is a schematic summary of the population that was studied.

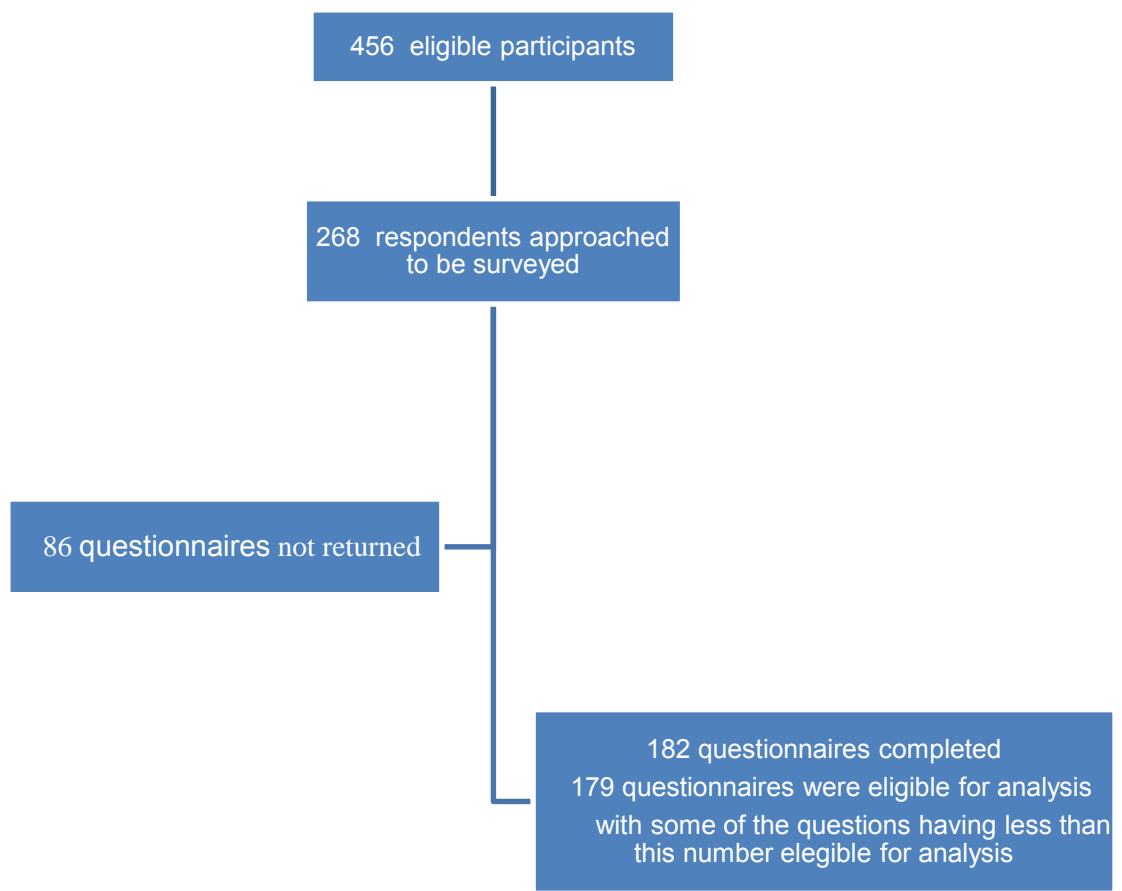


Figure 1: Schematic diagram of population studied

There were 456 eligible respondents, of whom 268 were sampled (67 per study level). 268 questionnaires were distributed. 182 (67.9%) completed questionnaires were returned and 86 (32%) were not returned. 179 completed questionnaires were eligible for analysis. Missing data was automatically eliminated by the SPSS program from the included questionnaires. The missing data was allocated a code '99' for 'not available'.

4.2 Demographic data

In this section, we will be looking at four main categories of demographic data, namely, age group, gender, ethnicity and religion.

4.2.1 Age group

Age information was supplied by 179 students. The majority of the participants were in the age group of 21-30 (n=72 or 40.2%), followed by ages 31-40 (n=70 or 39.7%). This was expected, as the recruitment and selection policy of the College sets the range for first time entrants to nursing at 18-35 years and up to 45 years of age for respondents who enter the program after completing the enrolled nursing qualification. Only 10% of the intake was allocated for this group, which accounted for the smaller percentage of older participants.

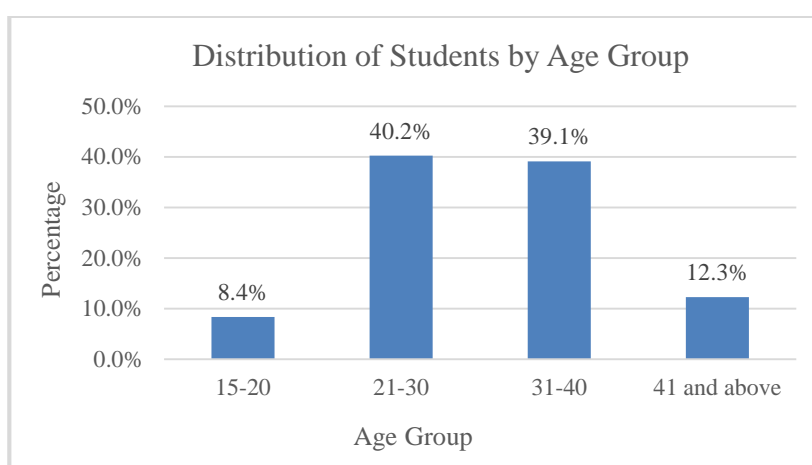


Figure 2: Distribution of respondents by age group

4.2.2 Gender

It was anticipated that there might be distinct gender-based differences with respect to attitudes and knowledge. However, male respondents were in the minority, only 10.6% of the sample, whilst female respondents were clearly in the majority, at 89.4%. This could also be attributed to the college recruitment and selection policy, which set a target intake for male students at approximately 20%. This did not unfairly discriminate, however, as this target was seldom reached. Worldwide trends have shown that fewer males than females enter the nursing profession (Payne, 2014).

4.2.3 Ethnicity

The research was conducted in an area whose dominant ethnic group was amaXhosa (96.1%), with a few amaZulu (1.7%), AbeSotho (1.1%) and other groups (1.1%). This variable was important in this study in order to understand the influence

of ethnic origin on a person's attitudes towards organ donation though the percentages were too small to really get a significant or interesting result.

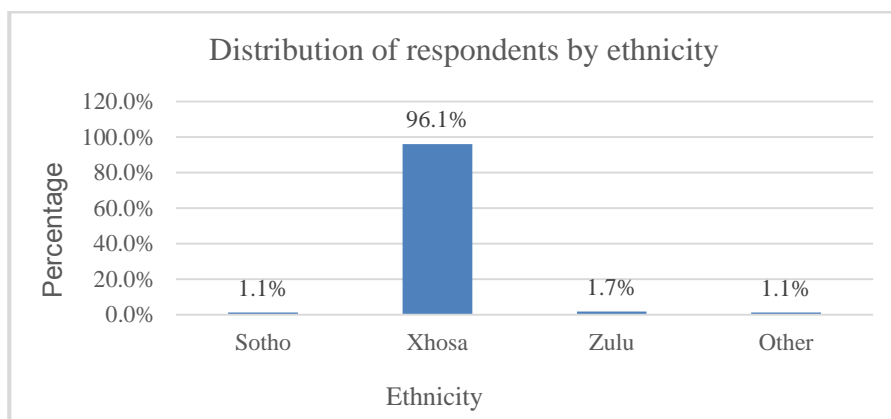


Figure 3: Distribution of respondents by ethnicity

4.2.4 Religion

It was anticipated that religion might have a significant influence on individual attitudes and life choices, especially with respect to organ donation. The majority of respondents were of the Christian faith (n=171 or 94%), followed by Traditional African Beliefs (n=9 or 5%), and with 2 (1.1%) of the respondents belonging to "other religions" so this also made it difficult to compare the results by religion.

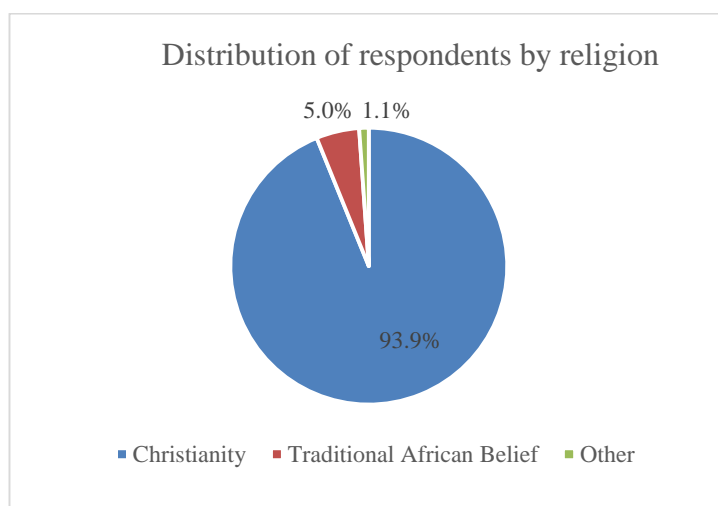


Figure 4: Distribution of respondents by religion

4.3 Prior knowledge of organ donation

Several questions investigated respondents' prior knowledge of organ donation and transplantation. For instance, whether they were registered as organ donors, had any prior information or education regarding organ donation, knew someone who had donated an organ while living, and knew someone who donated an organ after death. Table 6 summarises their responses.

Table 6: Responses to prior knowledge of organ donation

Question	% Yes	% No	Chi-square at p=0.05
18.1: Are you a registered organ donor?	1.60%	98.40%	0.000000
18.2: If not, would be prepared to register as one?	44.70%	55.30%	0.000000
13.1: Do you have any prior information or education regarding organ donation?	62.80%	37.20%	0.000615
13.10: Do you know someone who donated an organ whilst living?	74.30%	36.87%	0.000000
13.11: Do you know someone who donated an organ after death?	10.80%	89.20%	0.000000

According to Table 6, only 1.6% (n=3) were registered organ donors, which created the impression that most of the respondents were ignorant about this topic. A follow-up question asked whether they would be prepared to register as organ donors: just under half (i.e. n=79, 44.7%) replied "yes". This partly confirmed the researcher's assumption that most of the respondents were ignorant about organ donation or that they were driven by certain beliefs to be against organ donation; these issues were thus investigated later in the study.

The majority (n=124; 62.8%) of the respondents had some prior knowledge and information about organ donation, although more than third (n=73; 37.2%) did not. Interestingly, the majority (n=132; 74.3%) knew someone who had donated an organ while living, though the vast majority of the respondents (n=159; 89.2%) had no knowledge of an individual who had donated an organ after death.

4.4 Attitudes towards organ donation

This section covers the responses of the respondents towards organ donation. About 92.6% (n=166) of the respondents thought organ donation was a good idea, 5.4% (n=10) feeling otherwise. Further questions on a personal level related to whether they were donors themselves, knew about organ donation, what their medical history was, and whether their medical history might influence their decision to donate.

4.4.1 Cadaveric organ donation

Question 8 of the questionnaire focused on the willingness of the respondents to do a cadaveric donation. The students had to select one from three given options: “yes”, “undecided” and “no”. The responses are presented in Figure 5.

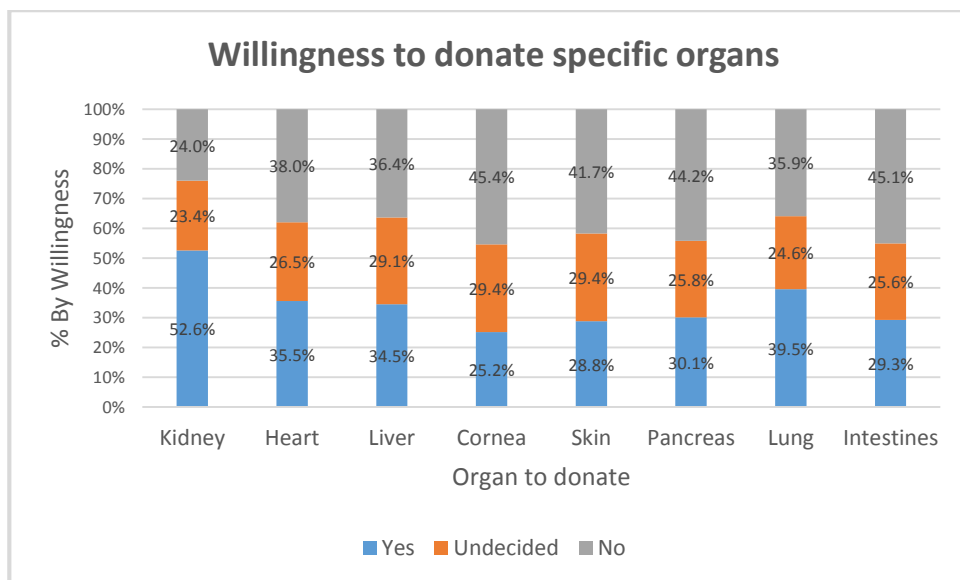


Figure 5: Attitudes towards cadaveric organ donation / Willingness to donate specific organs

According to Figure 6, over 50% of the respondents were willing to donate a kidney if they were to die unexpectedly. It is the only organ that the respondents were willing to donate.

Over 40% of the respondents were sure that they would not donate the cornea, the skin, pancreas and the intestines.

4.4.2 *Living organ donation to a relative*

Question 9 of the questionnaire focused on the preparedness of the respondents to do a living donation to a relative. They had to select one of three given options: “yes”, “undecided” and “no”. Respondents were asked to indicate whether they were prepared to donate a kidney or liver lobe as healthy people or under normal situations. The responses are presented in Figure 6.

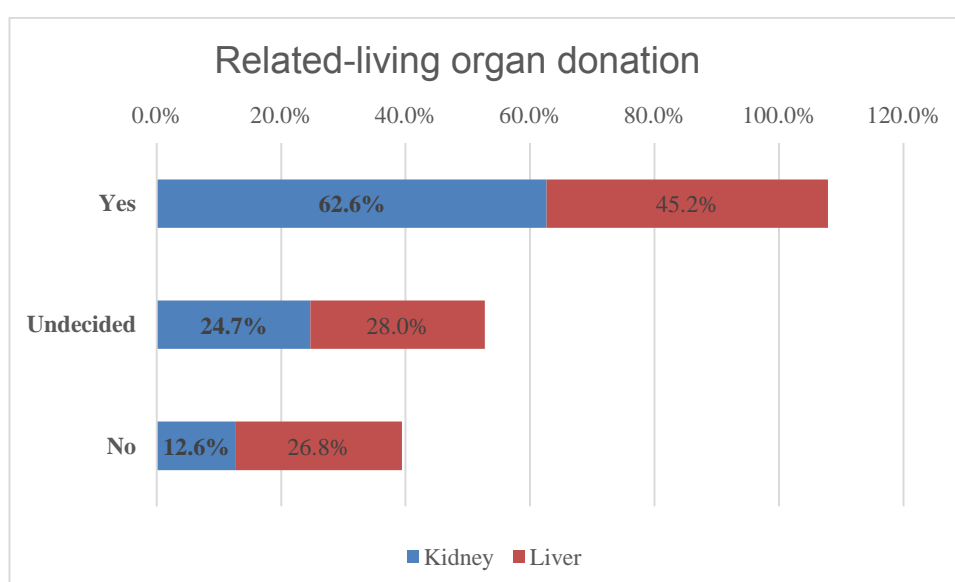


Figure 6: Willingness to donate organs to a relative while alive

The majority of the respondents were prepared to donate a kidney (n=112; 62.6%) or part of a liver (n=81; 45%) to a person to whom they were related. The remainder were undecided or sure they would not.

4.4.3 *Living organ donation to a stranger*

Respondents were also asked if they would donate a kidney or part of a liver to a stranger or someone who was not related to them at all. Figure 7 summarises their responses.

Living organ donation to a stranger

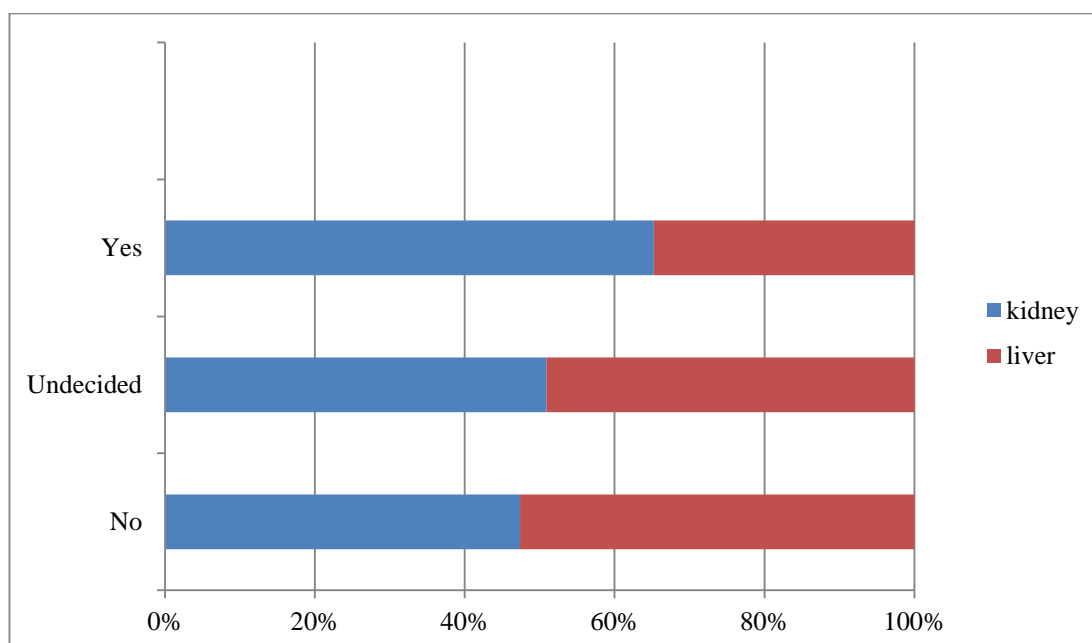


Figure 7: Willingness to donate organs to a non-relative while alive

Majority of respondents were prepared to donate a kidney (62.6%) and a liver (45%) to a relative, 68.3% were not prepared to donate the kidney and a liver (8%) to a stranger or someone to whom they were not related.

4.4.4 *Influence from family and others in giving consent to donate*

The sample is dominated by Blacks (see Figure 4). Respondents were asked to indicate with a “yes” or a “no”, whether their family, spouse, church elders, parents, or sibling would influence them in giving consent for organ donation. The responses are presented in Table 7.

Table 7: Influence from family and community

Sources of influence:	% Yes	% No
Family elders/uncles	45.4%	54.6%
Church elders	38.3%	61.7%
Parents	49.1%	50.9%
Spouse	46.0%	54.0%
Siblings	42.9%	57.1%
Other	30.0%	70.0%

Church elders seemed to have the least influence. All the other potential influences ranged between 42% and 49%, with parents having the greatest influence.

4.4.5 Professional role

Four subsections of Question 14 focused on the professional aspects of the respondents. Respondents asked whether they would encourage patients/ community to register as organ donors, patients' relatives to donate organs of their deceased loved ones and refer suitable brain-dead patients to a transplant team for organ donation or not. The respondents had to respond to the questions with either "yes" or "no". The responses are presented in Figure 8.

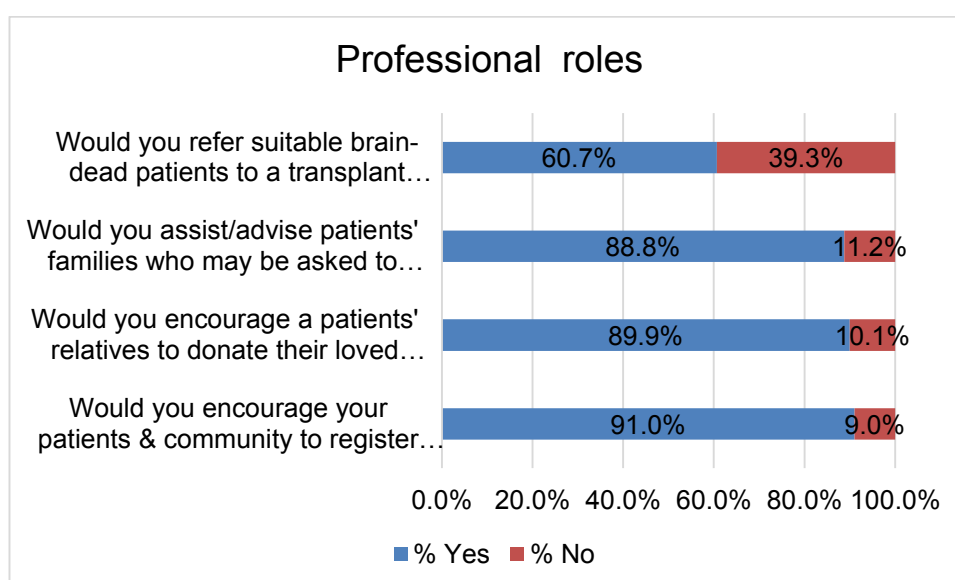


Figure 8: Professional roles

According to Figure 8, the majority of the respondents 80% (n=143) were willing to encourage their patients and community to register and donate organs, whilst 60% (n=107) thought they would refer suitable brain-dead patients to a transplant team for organ harvesting.

4.4.6 Medical history

Questions 15 and 16 focused on the medical history of the respondents. In Question 15, students were asked to indicate whether they had a chronic illness or not, while Question 16 prompted those who had indicated having a chronic illness to select from the list provided to them a list of possible chronic illnesses. The responses are presented in Figure 9.

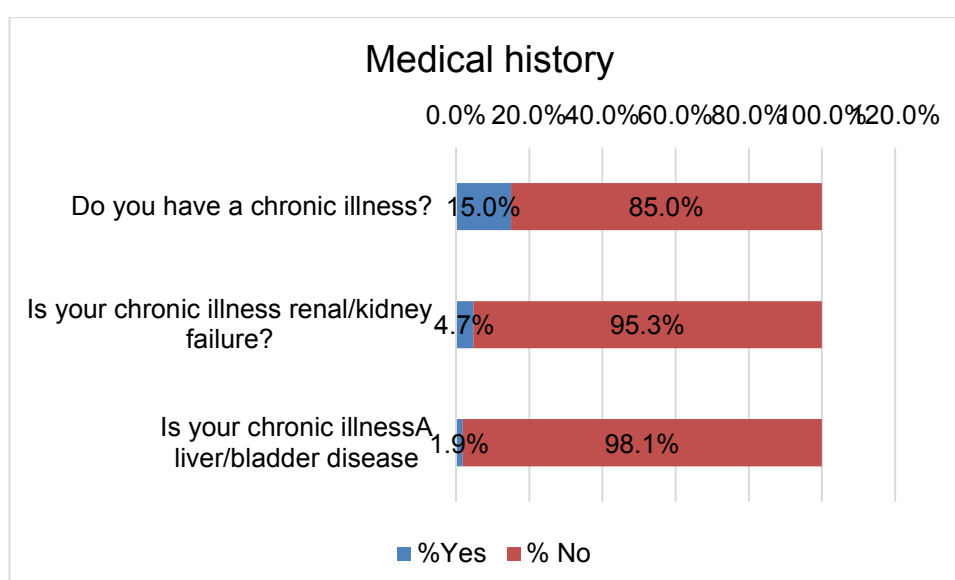


Figure 9: Medical history of respondents

A small number of respondents (n=27; 15%) indicated that they did indeed suffer from a chronic illness, while the vast majority did not. Of those who said yes, the vast majority was not suffering from a chronic illness relating to the liver, kidney or bladder. A small number (4.7%) suffered from renal/kidney failure, while 2% had a liver or bladder disease.

4.4.7 Year of study

The respondents were asked in Question 2, to indicate in which year of study they were currently registered. Their responses are summarised in Figure 10 below.

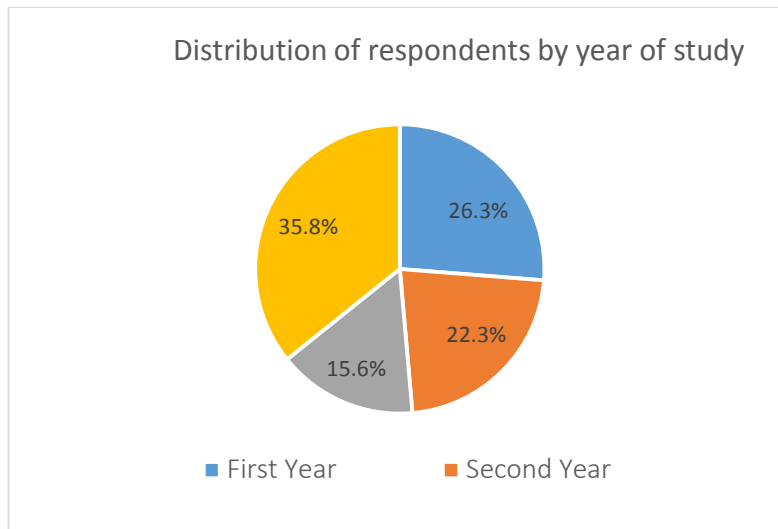


Figure 10: Distribution of respondents by year of study

The majority of respondents were in fourth year ($n=64$; 35.8%), followed by first year ($n=47$; 26.3%); second year ($n=39$; 22.3%) the third year level was the lowest ($n=28$; 15.6%).

4.5. Association between prior knowledge and organ donation

The association between prior knowledge and attitude towards donating an organ was explored using selected associations. In this section, living donation, influence from family and community, professional capacity and medical history of the students were all cross-tabulated against prior knowledge variables. The chi-square test was used to measure differences between groups and the extent of the differences. To remove confounding findings, the cross-tabulation involved only the “yes” and “no” responses. All the “undecided” responses were eliminated from the calculations.

4.5.1 Registered donor and living organ donation

The aim of this section was to determine whether being a registered donor influenced the decision to donate or not to donate an organ. In Table 8, the columns represented the responses indicating whether respondents are organ donors or not. This is the independent variable (it is assumed that you first become an organ donor before you decide to donate). The rows represented the “yes” and “no” responses of the students who indicated a willingness or unwillingness to donate. The hypothesis was that there were no differences between respondents who were donors and

those who were not donors when it came to willingness to donate a kidney or a liver under living donation. This was tested against the alternative hypothesis that there were such differences. The chi-square test was used to confirm the truthfulness of the hypothesis at the 5% significance level. Note that the columns and rows do not add up to 100%, as these were extracted from rows and columns of two independent variables of a cross table.

Table 8 is thus a summary of the “yes” and “no” responses of the students on whether they were organ donors, cross-tabled against their willingness (only the “yes” responses) to donate a kidney or a liver under living conditions.

Table 8: Registered donor and living organ donation

Situation	% Yes	% No	Chi-square p-value
Donating kidney to relative	100.0%	82.4%	0.00000
Donating liver to relative	80.0%	61.7%	0.00000
Donating kidney to stranger	66.7%	19.0%	0.00000
Donating liver to stranger	50.0%	10.0%	0.00000

From Table 8, it emerged that, even though the respondents were organ donors, they were not willing to donate part of a liver, whether to a person they are related to or to a stranger but were more willing to donate a kidney to a stranger as well as to a relative. All the p-values were less than 0.05, an indication that there was a significant difference with regard to donating an organ and relationship to the recipient.

4.5.2 Prior knowledge and living organ donation

In this section, prior knowledge about organ donation is cross-tabulated with living donation. The aim was to find out whether having prior knowledge of organ donation influenced the decision to donate or not to donate an organ. In Table 9, the columns represent the responses. This is the independent variable (having or not having prior knowledge), as it was assumed that you first become knowledgeable before you decide to donate. The rows represent the “yes” responses of the respondents who

indicated a willingness to donate. The hypothesis was that there were no differences between respondents who had prior knowledge and those who did not when it came to the willingness to donate a kidney or a liver under living donation. Alternative hypothesis stated that there were differences between students who had prior knowledge and those who did not. The chi-square test was used to confirm the truthfulness of the hypothesis at the 5% significance level. Note that the columns and rows do not total to 100%, as these were extracted from rows and columns of two independent variables of a cross-table.

Table 9 is a presentation of the “yes” and “no” responses of the respondents on whether they had received some form of information or education regarding organ donation.

Table 9: Prior knowledge and living organ donation

Situation	% knowledge Prior	% No knowledge Prior	Chi-square p-value
Donating kidney to relative	63.5%	64.1%	0.00000
Donating liver to relative	55.6%	44.0%	0.00000
Donating kidney to stranger	26.3%	17.6%	0.00000
Donating liver to stranger	21.1%	9.2%	0.00000

From Table 9, it appears that the majority (63.5% and 55.6%) of respondents with prior knowledge would be willing to donate a kidney or a liver to a relative. This willingness declined in the case of donations to a stranger. The p-values to the chi-square tests were $p=0.00<0.05$, pointing to significant differences on how the students felt about donating.

4.5.3 Prior knowledge and organ transplantation

In this section, Question 11 focused on receiving an organ. Respondents were asked whether they would accept an organ from a person of different religion, gender or clan. The respondents had to respond to the question with “Yes” or “No”. The responses are presented in Table 10. The hypothesis was that there were no

differences between respondents who were registered donors and those who were not when it comes to accepting organs for transplantation. Alternative hypothesis stated that there were such differences. The chi-square test was used to confirm the truthfulness of the hypothesis at the 5% significance level. Note that the columns and rows do not add up to 100%, as these were extracted from rows and columns of two independent variables of a cross table.

Table 10: Prior knowledge and organ transplantation

Situation	% knowledge	Prior % No prior knowledge	Chi-square p-value
Accepting an organ from a person of a different religion	100.0%	73.6%	0.00000
Accepting an organ from a person of a different clan	71.4%	95.4%	0.00000
Accepting an organ from a person of a different gender	83.3%	73.8%	0.00000

According to Table 10, all the registered organ donors said they would accept an organ from a person of a different religion; a smaller number, i.e. 73.6% of respondents, not registered organ donors were willing to accept organs from person of a different religion. With regard to accepting organs from persons of a different clan, these percentages were 71.4% of the registered organ donors compared to 95.4% of respondents who were not registered organ donors who refused accepting organs from people of a different clan. With regard to accepting organs from persons of a different gender, the percentages were 83.3% of registered organ donors and 73.8% of those who were not registered donors. The p-values to the chi-square tests $p=0.00<0.05$, pointing to significant differences on how the respondents felt about organ transplantation.

4.5.4 *Prior knowledge and organ donation or transplantation*

The responses in this section looked at the impact of prior knowledge on organ donation and transplantation are presented in Table 11.

The hypothesis is that there are no differences between respondents who have some form of education and those who do not when it comes to accepting organs for transplantation. The alternative hypothesis is that there are such differences. The chi-square test was used to confirm the truthfulness of the hypothesis at the 5% significance level.

Table 11 is a presentation of the “yes” and “no” responses of the respondents on whether they have some knowledge of organ donation or not cross-tabulated with their willingness to accept organs. Rows represent the “yes” responses of whether they would accept organs or not.

Table 11: Prior knowledge and organ donation or transplantation

Situation	% Prior knowledge	% No prior knowledge	Chi-square p-value
Accepting an organ from a person of a different religion	73.7%	63.6%	0.00000
Accepting an organ from a person of a different clan	73.7%	65.4%	0.00000
Accepting an organ from a person of a different gender	78.9%	65.9%	0.00000

From Table 11, 73.7% of the respondents with some knowledge of organ donation indicated they would accept an organ from a person of a different religion compared to the 63.6% respondents with no knowledge of organ donation but were willing to accept organs from persons of a different religion. With regard to organs from a person of a different clan, these percentages were 73.7% and 65.4% respectively. And lastly, with regard to accepting organs from persons from a different gender, the percentages were 78.9% and 65.9% respectively. The p-values to the chi-square tests $p=0.00<0.05$, indicated that significant differences existed between how the students felt about organ transplantation and their prior knowledge of organ donation.

4.6 *Medical history and organ donation or transplantation*

In this section medical history results were cross-tabulated with transplant responses. Does suffering some of chronic illness influence the decision to accept organs under various situations? Table 12 represents the columns of “yes or “no” responses, indicating whether respondents suffered from a chronic illness or not. This was the independent variable (suffering or not suffering from a chronic illness); it was assumed that you would first suffer from the condition before you would need an organ transplant). The rows represent the “yes” responses of the students who indicated willingness or no willingness to accept organs.

The hypothesis was that there were no differences between respondents suffering from a chronic illness and those who were healthy when it came to accepting organs for transplantation. Alternative hypothesis stated that there were differences between the sick and the healthy. The chi-square test was used to confirm the truthfulness of the hypothesis at the 5% significance level. Note that the columns and rows do not add up to 100%, as these were extracted from rows and columns of two independent variables of a cross table.

Table 12: Medical history and organ donation or transplantation

Situation	% Medical history	% No medical history	Chi-square p-value
Accepting an organ from a person of a different religion	10.7%	60.4%	0.00000
Accepting an organ from a person of a different clan	10.6%	62.7%	0.00000
Accepting an organ from a person of a different gender	9.9%	86.5%	0.00000

Table 12 above represents the responses of the respondents with respect to chronic illness and organ transplantation. Only 10.7% of the respondents suffered from a chronic illness and indicated they would accept an organ from a person of a different religion, whilst 60% of the respondents with no chronic illness indicated they would accept an organ from a person of a different religion. 9.9% and 86.5% respectively,

and from a person of a different clan, the percentages were 10.6% and 62.7% respectively. The p-values were close to zero and less than 0.05, an indication that these were significant differences. It is a concern to note that those who may be most in need of an organ are against accepting it, whereas those who seem to be healthy embrace the idea of accepting an organ.

4.7 Association between demographic variables and organ donation

In this section, the association between selected demographic variables and organ donation are investigated. These demographic variables are age group, gender, ethnicity and religion.

4.7.1 Age group

4.7.1.1 Age group and cadaveric organ donation

The hypothesis was that, as all the respondents were nurses and exposed to a health-care environment, they were likely to make similar decisions. This was tested for several organs, namely, kidney, heart, liver, pancreas and lung.

Firstly, with regard to kidneys, the hypothesis was that there would be no difference by age group for the student nurses to be willing to donate a kidney after they had been declared brain-dead subsequent to a traumatic event. The alternative hypothesis was that there would be significant differences. The cross-tabulation results are presented in Table 13 below.

Table 13: Age group and cadaveric kidney donation

Age group	Willingness to donate a kidney		
	% Yes	% Undecided	% No
15 – 20	0.00%	2.90%	2.90%
21 -30	14.70%	6.60%	16.90%
31 -40	19.10%	11.00%	11.00%
41 and above	1.50%	5.90%	5.10%

According to Table 13, the responses of the respondents from the extreme age groups 15-20 and 41+ indicate an unwillingness to donate a kidney after being declared brain-dead. Certainty with regard to the willingness to donate a kidney increased by maturity in age groups 21-30 and 31-40, whilst certainty with regard to not being willing to donate decreased with increasing age. The chi square measure of association is $0.03 < 0.05$, an indication that there was a significant relationship between age and willingness to donate a kidney after death.

Secondly, with regard to donating the heart, the association between age and willingness to donate a heart under tragic circumstances is presented in Table 14 below. The hypothesis was that there was no relationship between age and willingness to donate a heart after brain death and post a traumatic event, against the alternative hypothesis that there was indeed such a relationship.

Table 14: Age group and cadaveric heart donation

Age group	Willingness to donate the heart		
	% Yes	% Undecided	% No
15- 20	0.00%	2.90%	2.90%
21 -30	14.70%	6.60%	16.90%
31 -40	19.10%	11.00%	11.00%
41 and above	1.50%	5.90%	5.10%

From Table 14 above indicates significance level was 0.04.

Thirdly, we looked at willingness to donate the liver after death. The association between age and willingness to donate a liver under tragic circumstances is presented in Table 15 below. The hypothesis was that there was no relationship between age and willingness to donate a liver after brain death and post a traumatic event, against the alternative hypothesis that there was such a relationship.

Table 15: Age group and cadaveric liver donation

Age group	Willingness to donate the liver		
	% Yes	% Undecided	% No
15- 20	0.00%	3.70%	2.20%
21 -30	14.70%	8.80%	14.70%
31 -40	17.60%	10.30%	13.20%
41 and above	1.50%	5.90%	5.10%

From Table 15 above, suggests no significant difference, the chi-square test of association is 0.10.

Fourthly, the association between age and willingness to donate a pancreas under tragic circumstances was investigated; the results are presented in Table 16 below.

Table 16: Age group and cadaveric pancreas donation

Age group	Willingness to donate the pancreas		
	% Yes	% Undecided	% No
15- 20	0.00%	3.80%	2.30%
21 -30	12.80%	6.80%	18.80%
31 -40	15.00%	9.00%	17.30%
41 and above	1.50%	6.00%	5.30%

From Table 16 above, a trend emerged from the willingness to donate the pancreas ("yes" responses) and the "undecided" categories, both of which increased with age for all three categories, whilst declining for the oldest group (41+). The results indicate no variability on how the respondents felt about donating their pancreas if they were to die tragically. The significance of this lack of differences is confirmed by the chi-square p-value of $0.051 > 0.05$, suggesting that the students felt the same about donating a pancreas across ages.

Lastly, the association between age and willingness to donate a lung under tragic circumstances is presented in Table 17.

Table 17: Age group and lung cadaveric donation

Age group	Willingness to donate the lung		
	% Yes	% Undecided	% No
15- 20	0.70%	3.70%	1.50%
21 -30	16.90%	6.60%	14.70%
31 -40	19.90%	8.10%	14.00%
41 and above	1.50%	5.90%	14.30%

From Table 17, a trend emerged from the willingness to donate a lung for the “sure to donate” and the “undecided categories”, which increased with age for all three categories from age 15-40, but declined in the oldest respondents (41+). There was no clear trend for the “sure not to donate a lung” category, however. The chi-square test of association was $p=0.23>0.05$, suggesting that the respondents’ opinions did not vary significantly by age when it came to donating a lung should they die unexpectedly.

4.7.1.2 Age group and living organ donation

In this section, living organ donations for the various age groups were investigated, in three categories:

- living kidney donation to a relative
- living kidney donation to a stranger
- living liver donation to a relative

Question 9 of the questionnaire asked the respondents to indicate with “yes”, “no” or “undecided” whether they would donate a kidney to a family member or a relative whilst they were still alive. An association between age groups and donating a kidney to a relative whilst alive was thus tested. The hypothesis was that there was an association between age group and a living donation, against the alternative hypothesis of no association. The results are presented in Table 18.

Table 18: Age group and living kidney donation to a relative

Age group			
	% Yes	% Undecided	% No
15- 20	1.40%	2.10%	2.10%
21 -30	27.50%	9.20%	1.40%
31 -40	29.60%	8.50%	3.50%
41 and above	5.60%	4.20%	2.80%

No association between age and willingness to donate a kidney to a relative was found. The $p\text{-value}=0.056>0.05$, suggesting that there were no differences in how the respondents thought about donating a kidney

Respondents were asked to indicate with either “yes”, “no” or “undecided” whether they would donate a liver to a family member or relative. The hypothesis that there is an association between age group and donating to a relative against the alternative hypothesis of no association was tested. The results are presented in Table 19.

Table 19: Age group and living liver donation to a relative

Age group	% Yes	% Undecided	% No
15-20	13.3%	40.0%	46.7%
21-30	56.9%	26.2%	16.9%
31-40	45.6%	26.3%	28.1%
41 and above	30.0%	30.0%	40.0%

The chi-square analysis revealed there were differences between age groups on how the respondents feel about donating a liver whilst alive to someone they knew or to a relative. The $p\text{-value} = 0.0000<0.05$ suggests a strong association between age and the decision to donate. This is in line with the thought that the older group would think differently than the younger group, and that the former would be much more responsible and compassionate.

Question 9 dealt with the respondents' willingness to donate a kidney to a person to whom they were not related or who was a stranger. Age groups were analysed to determine whether there was an association between age groups and donating a kidney to a stranger whilst alive. The hypothesis was that there was no difference between the age group and donating to a stranger, against the alternative hypothesis that there would be differences by age group.

4.7.1.3 Age group and influence by church elders

In Question 12, respondents had to indicate with "yes" or "no" whether family elders/uncles, church elders, parents, spouse, siblings or other people in general would influence their willingness to consent to organ donation, irrespective of the respondent's personal wishes. In Section 4.7. The responses were cross-tabulated against demographic variables – age-groups – and the chi-square test was used to test the significance of the possible existing associations.

The influence of church elders was tested against the alternative, viz. that church elders etc. would not have an influence. The results are discussed in Table 20.

Table 20: Age group and influence by church elders

Age group		
	% Yes	% No
15-20	1.50%	4.40%
21-30	14.60%	23.40%
31-40	14.60%	27.00%
41 and above	6.60%	5.80%

Table 20 suggests that the age groups have different views regarding being influenced by church leaders in giving consent for organ donation irrespective of their own wishes. However, the Chi square analysis p-value=0.680 suggests no significant differences between age-range and being influenced by a church elder.

The majority of the respondents in the age-range of 15-40 think their decisions would never be influenced by church elders, whilst smaller percentages among the oldest separates those that think church elders would influence the giving of consent to donate an organ.

4.7.1.4 Age group and professional capacity

Question 14 of the questionnaire respondents had to indicate with “yes” or “no” whether in their professional capacity they would encourage the community to register for organ donation. In Section 4.7.1.4. The responses were cross-tabulated against demographic variable – age-groups – and the chi-square test was used to test the significance of the possible existing associations is significant or not by employing the chi-square at the 5% significance level. The results are presented in Tables 21–22.

Table 21: Age group and encouragement to register as organ donor

Age group		
	% Yes	% No
15- 20	3.4%	2.1%
21 -30	35.6%	2.1.%
31 -40	39.0%	3.4%
41 and above	12.3%	0.0%

Table 22 is a cross-tabulation of the relationship between age group and willingness to refer brain-dead patients for organ testing and possible donation. The significance for the possible association existing between age and reason to donate was investigated using the chi-square test at the 5% significance level.

Table 22: Age group and patient referral

Age group		
	% Yes	% No
15- 20	0.7%	5.0%
21 -30	27.7%	10.6%
31 -40	25.5%	15.6%
41 and above	6.4%	6.4%

Table 22 results shows that ages 15-20 and 41 and above were not to refer brain dead patients to transplant team whilst the ages 21-40 would do so. The p-value of $0.441 > 0.05$ suggests that equal proportions of the respondents by age group thought they would refer brain-dead patients to a transplant team for organ harvesting.

4.7.2 Gender

The second demographic variable investigated was gender; in this regard, the association between gender and the attitude towards donating an organ was assessed. The hypothesis was that there was no association between gender and donating an organ under tragic circumstances/ cadaveric against the alternative hypothesis that there was such an association.

4.7.2.1 Gender and cadaveric organ donation

The summary of the responses and the significance of the association are given in Table 23.

Table 23: Gender and cadaveric organ donation

Cadaveric organ donation	% Yes Female	% Yes Male	Chi-square p-value
Kidney	48.30%	4.20%	0.171
Heart	33.10%	2.90%	0.472
Liver	31.60%	2.90%	0.357
Pancreas	43.60%	0.90%	0.176
Lung	35.30%	3.70%	0.192

The responses in Table 23 suggest that there were huge differences between the female and male attitudes towards donating organs under tragic circumstances. Female responses ranged between 31 and 48.3%, whilst male responses ranged between 0.9 and 4.2%. The p-values were all greater than 0.05, suggesting that both females and males thought alike when it came to donating organs. The low proportion of “yes” responses were an indication that organ donation was not something they were keen to do, even after death.

4.7.2.2 Gender and living organ donation

Respondents were asked to indicate whether they would donate a kidney or a liver to a relative whilst alive. The null hypothesis was that there was a relationship between gender and donating an organ, which was tested against the alternative hypothesis that there was no such relationship. The summary of the responses is provided in Table 24.

Table 24: Gender and living organ donation

Living organ donation	% Yes Female	% Yes Male	p-value
Donate a kidney to a relative	57.5%	5.2%	0.00000
Donate part of liver to a relative	42.0%	3.2%	0.00000
Donate a kidney to a stranger	14.7%	3.4%	0.00585
Donate part of liver to a stranger	9.3%	0.6%	0.00657

According to Table 24, a significantly larger proportion of females than males were willing to donate an organ. There was a marked difference among women between donating to a relative (57.5% and 42% for kidney and liver respectively) as opposed to a stranger (14.7% and 9.3% respectively). Among the males, there was only a slight difference. Overall, the responses suggested that females were more willing to donate their organs during their lifetimes than males. All the p-values of the chi-square tests were less than 0.05, indicating that for women the wellness of other human beings was more important than it was for men.

4.7.2.3 Gender and influence from family and community

In exploring the association between gender and the influence of family and community members, it was assumed that there were no differences between how the students thought certain individuals would influence their decision to donate an organ, according to their gender. This assumption was tested against the alternative that did have an influence. The results are presented in Table 25.

Table 25: Gender and influence from family and community

Sources of influence	% Yes Female	% Yes Male	Chi-square p-value
Church leaders	40.2%	5.2%	0.000000
Parents	35.0%	3.7%	0.000000
Spouse	43.2%	5.9%	0.005853
Siblings	41.1%	4.9%	0.006574
Relatives	37.3%	5.6%	0.000000

The hypothesis was that there would be no difference between males and females on whether they would ask for permission to donate their organs, either before or after death, or whether they would seek the agreement of church elders, parents, spouses, siblings or relatives to donate. The alternative hypothesis was that there were indeed differences.

From Table 25, it appears that, in general, more females than males thought that other individuals would influence their decision to consent to organ donations. All the p-values were less than 0.05, confirming that differences existed.

4.7.2.4 Gender and professional capacity

The association between gender and the professional roles the respondents played towards organ donation was investigated, and specifically the impact it would have on their patients. The hypothesis was that there was an association between gender and the role of the nurses in convincing those they look after to donate their organs after death. The null hypothesis was that there were no differences between how male and female nurses would convince those they look after to donate their organs. The responses and the significance of the associations are given in Table 26.

Table 26: Gender and professional capacity

Donation	% Yes Female	% Yes Male	Chi-square p-value
Encouraging patients & community members to register as organ donors	83.1%	7.9%	0.000000
Referring brain-dead patients to a transplant team for organ harvesting	33.5%	5.8%	0.000000

It appears that there is a significant difference between males and females. Whilst 83% of the female nurses would encourage patients and communities to register as organ donors, only 7.9% of the male nurses would do so. Similarly, 33.5% of the nurses would refer brain-dead patients to a transplantation team for organ harvesting, whilst only 5.8% of the male student nurses would do so. Interestingly, although the opinions of male and female nurses were significantly different (the p-values are less than 0.05), there was a low response in both cases on the referral of brain-dead patients to teams for organ harvesting. This implies that there is association between gender and role of the respondents in convincing those they look after into donating organs.

4.7.3 Ethnicity and organ donation

The third demographic variable studied was ethnicity. Ethnicity is believed to influence the attitudes of individuals in the decisions they take. Respondents were asked in Question 4 to respond by indicating their ethnicity and their responses are

presented in Figure 4. Cross-tabulation of ethnicity with variables is presented in Table 27 – 32.

4.7.3.1 Ethnicity and cadaveric organ donation

The results of the summarised cross-tabulation of ethnicity by cadaveric donation showed no significant differences between the ethnic groups on how they felt about organ donation. A larger proportion of the isiXhosa nurses preferred to donate a kidney should they die tragically, compared to donating the other organs.

Table 27: Ethnicity and cadaveric organ donation

Cadaveric organ donation	% Yes isiXhosa	% Yes isiZulu	% Yes Sesotho	Chi-square p-value
Kidney	51.0%	0.7%	0.7%	0.701
Heart	34.6%	0.7%	0.7%	0.634
Liver	33.1%	0.7%	0.7%	0.634
Pancreas	28.6%	0.8%	0.6%	0.655
Lung	37.5%	0.7%	7.7%	0.687

4.7.3.2 Ethnicity and living organ donation

Table 28 represents the summarised cross-tabulation of ethnicity by living donation. There were significant differences between the ethnic groups when it came to donating organs, irrespective of whom they are donating to. All the p-values were less than 0.05, confirming the differences between the ethnic groups' perceptions about donating a kidney or a liver.

Table 28: Ethnicity and living donation

Living organ donation	% Yes isiXhosa	% Yes isiZulu	% Yes Sesotho	Chi-square p-value
Donating kidney to relative	64.1%	0.6%	1.7%	0.03600
Donating liver to relative	17.9%	0.6%	0.6%	0.00000
Donating kidney to stranger	17.9%	0.6%	0.6%	0.00000
Donating liver to stranger	9.7%	0.6%	0.6%	0.00000

4.7.3.3 Ethnicity and sources of influence

The responses of the respondents on how ethnicity would influence their decision to donate their organs are summarised in Table 29. The hypothesis was that there would be no difference between the ethnic groups on whether they would ask for permission or be in agreement with church elders, relatives and spouses to donate. The alternative hypothesis was that there were such differences.

Table 29: Ethnicity and sources of influence

Sources of influence	% Yes isiXhosa	% Yes isiZulu	% Yes Sesotho	Chi-square p-value
Church leaders	36.5%	0.6%	0.7%	0.410
Parents	37.0%	1.2%	1.2%	0.00000
Spouse	47.9%	0.6%	0.6%	0.00000
Siblings	44.8%	0.6%	0.6%	0.00000
Other	41.6%	0.6%	0.6%	0.00000

From Table 29, it can be seen that, in general, a greater proportion of Xhosas (ranging from 36.5% to 47.9%) than other ethnic groups (ranging from 0.6% to 1.2%) thought that church leaders, parents, spouse, siblings and relatives would influence them, when deciding whether to give consent for organ donations

There were no significant differences between the ethnic groups on giving consent by church leaders. The $p\text{-value} = 0.410 > 0.05$. This suggested that the opinions of church leaders did not matter across ethnic groups considering the distribution of the respondents in Figure 4. Their decisions as to whether they would choose to donate or not were thus independent.

In contrast, all the other $p\text{-values}$ are less than 0.05, suggesting that differences did exist between the ethnic groups with regard to the influence exerted on them by other parties, such as parents, spouses, siblings and relatives.

4.7.3.4 Ethnicity and professional capacity

Table 30 presents the responses of respondents when asked whether they would try to convince their patients and relatives to donate and whether they would refer brain-dead patients to medical organ-harvesting teams. The aim was to assess whether ethnic groups perceive their roles differently when it comes to encouraging patients to donate organs.

Table 30: Ethnicity and professional capacity

Situation	% Yes isiXhosa	% Yes isiZulu	% Yes Sesotho	Chi-square p- value
Encourage patients and community to register as organ donors	90.4%	0.7%	1.4%	0.883
Refer patients to a transplant team for organ harvesting	59.6%	0.7%	0.7%	0.690

According to Table 30, there were no significant differences among the ethnic groups in response to both questions (the $p\text{-values}$ were greater than 0.05).

4.7.3.5 Ethnicity and medical history

Respondents were asked whether they had any chronic illnesses; their replies are captured in Table 31. The proportion of students suffering from chronic illnesses was small compared to the rest who did not suffer from a chronic illness.

Table 31: Ethnicity and medical history

Situation	% Yes isiXhosa	% Yes isiZulu	% Yes Sesotho	Chi-square p-value
Do you suffer from a chronic illness?	13.8%	0.6%	1.1%	0.00000
Is your chronic illness renal/kidney failure?	6.0%	0.6%	0.6%	0.00000
Is your chronic illness a liver/bladder disease?	1.2%	0.6%	0.6%	0.00000

A few of the respondents suffered either from a renal/kidney related or a liver/bladder related chronic illness. There were significant differences in the proportions of students suffering from chronic illnesses across the ethnic groups, indicated by the fact that the p-value was zero.

4.7.3.6 Ethnicity and organ transplantation

Respondents were asked whether they would be willing to accept an organ from a person who belonged to a different religion or a different clan. Table 32 summarises their responses in relation to ethnicity.

Table 32: Ethnicity and organ transplantation

Transplant	% Yes isiXhosa	% Yes isiZulu	% Yes Sesotho	Chi-square p-value
Accept an organ from different religion	60.3%	0.0%	1.4%	0.191
Accept an organ from different clan	63.8%	0.0%	1.4%	0.136

A significant percentage (60.3% and 63.8%) of the Xhosas would accept an organ from a person of a different religion or clan respectively. None of the Zulus indicated that they would, and only 1.4% of the Sotho said they would. The p-value were both

above 0.05; $p=0.191$ and $p=0.136$ which implies that there is no significant difference between ethnic groups in accepting organs under various circumstances.

4.7.4 Religion

The fourth demographic variable studied was religion. As with ethnicity, association between religion and cadaveric donation, living donation, consent, professional capacity, medical condition and organ transplant was investigated.

4.7.4.1 Religion and cadaveric organ donation

Table 33 shows the results of the summarised cross-tabulation of religion by cadaveric donation.

Table 33: Religion and cadaveric organ donation

Cadaveric organ donation	% Yes Christianity	% Yes Traditional African Belief	% Yes Other	Chi-square p-value
Kidney	51.4%	0.7%	0.7%	0.480
Heart	34.6%	0.7%	0.7%	0.983
Liver	33.1%	0.7%	0.7%	0.04
Pancreas	27.8%	0.9%	2.6%	0.925
Lung	37.5%	0.7%	0.7%	0.892

According to Table 33, 51% of Christian respondents would donate a kidney if they were to die tragically, compared to only 0.7% of students with traditional African beliefs and other religious groups. With regard to the other organs (heart, liver, pancreas and lung), the perceptions of Christian respondents ranged between 27.8% and 37.5%. Less than 1% of from other religious groups were willing to donate these organs – with the exception of the pancreas, where the response was 2.6%.

Whilst there were no differences on how the various religious groups felt about donating a kidney, a heart, a pancreas or a lung (all p-values > 0.05), their views of donating a pancreas varied significantly by ethnic group ($p=0.04<0.05$). One could thus conclude that there was no association between religion groups and the donation of a pancreas.

4.7.4.2 Religion and living organ donation

Table 34 represents the summarised cross-tabulation of the students' religious affiliations by living organ donation.

Table 34: Religion and living organ donation

Living organ donation	% Yes Christian	% Yes Traditional African Belief	% Yes Other	Chi-square p-value
Donate kidney to relative	62.2%	2.9%	0.6%	0.19200
Donate liver to relative	41.8%	2.5%	0.6%	0.00000
Donate kidney to stranger	17.7%	0.6%	0.6%	0.00000
Donate liver to stranger	9.8%	0.6%	0.6%	0.00002

Christian respondents were the majority (62.2%) when it came to donating a kidney or liver, irrespective of the blood relationship and 41.8% were willing to donate a lung to a relative, with the willingness to donate a kidney or a liver to a stranger declined to below 20% .All the other religious groups' responses ranged between 0.6% and 2.9%. Except for the case of donating a kidney to a relative, where there were no significant differences between the religious groups ($p\text{-value}=0.192>0.05$), there were significant differences between the ethnic groups for the other categories whose p-values were less than 0.05.

4.7.4.3 Religion and influence from family and community

The responses of the respondents on the association between religion and the decision to donate are presented in Table 35. The hypothesis was that there would be no difference between the religious groups on whether they would ask for permission or be in agreement with church elders, relatives and spouses to donate. The alternative hypothesis was that there were such differences.

Table 35: Religion and influence from family and community

Sources of influence	% Yes Christianity	% Yes African Traditional Beliefs	% Yes Other	Chi-square p-value
Church elders	42.5%	2.9%	0.6%	0.00000
Parents	36.0%	1.8%	0.6%	0.00000
Spouse	45.9%	2.9%	0.6%	0.00000
Siblings	42.7%	3.0%	0.6%	0.00000
Others	39.5%	3.1%	0.6%	0.00000

The proportion of Christian respondents who would be influenced by their parents and spouses ranged between 36 and 45.9%, whilst the proportions of students with African traditional beliefs ranged between 1% and 3.2%. There were significant differences between religious groups when it came to getting permission from church leaders and family members, like spouses, siblings and parents. The $p\text{-values}=0.0 < 0.05$ suggest that the opinions of the other people mattered across all religious groups. Whether they decided to donate or not was thus dependent on other people's views or inputs.

4.7.4.4 Religion and professional capacity

Table 36 presents the responses of the nurses with regard to convincing their patients and relatives to donate organs, and their willingness to refer patients to transplant teams. The aim was to assess whether religious groups perceived their roles differently when it came to these two questions.

Table 36: Religion and professional capacity

Situation	% Yes Christianity	% Yes Traditional African belief	% Yes Other	Chi-square p-value
Encourage patients and community to register as organ donors	88.4%	2.7.%	1.4%	0.518
Refer patients to a transplant team for organ harvesting	58.9%	1.4%	0.7%	0.583

From Table 36, there were no significant differences on the willingness of the nurses by religious group to convince or encourage patients and their relatives to donate. Whilst 88.4% of the Christian nurses would encourage patients and communities to register as organ donors, only between 1% to 3% of the other religious groups would do so. Similarly, 58.9% of the Christian nurses would refer brain-dead patients to a transplant team for organ harvesting, whilst only about 1% of the other religious groups would do so (the p-values are greater than 0.05), $p=0.518$ and $p=0.583$ respectively.

4.7.4.5 Religion and medical condition

Respondents were asked about their medical condition, in order to ascertain whether this influenced their decision to donate an organ or not. The chi-square test was used to test for differences between the religious groups at the 5% significance level. It was assumed that there were no differences between the religious groups by medical status, against the hypothesis that there were differences between the three religious groups.

Table 37: Religion and medical condition

Situation	% Yes Christianity	% Yes African Traditional beliefs	% Yes Other	Chi-square p-value
Do you suffer from a chronic illness?	13.9%	0.7%	0.0%	0.117
Is chronic illness kidney related?	45.6%	0.7%	0.7%	0.809
Is your chronic illness liver related?	63.7%	0.7%	0.0%	0.117

4.7.4.6 Religion and organ transplantation

The respondents' views were assessed in relation to their religious groups, and whether they would accept organs from someone who belonged to a different religion or a different clan. In Table 38 those responses are summarised.

Table 38: Religion and organ transplantation

Transplant	% Yes Christianity	% Yes African Traditional beliefs	% Yes Other	Chi-square p-value
Accept an organ from different religion	61.2%	0.7%	0.0%	0.02
Accept an organ from different clan	64.0%	0.7%	0.7%	0.177

According to Table 38, there were significant differences between the religious groups in relation to accepting organs from persons of different religion. Whilst 61.2% of the Christian religion nurses would accept organs from persons of different religions, only about 1% of the African Traditional belief nurses would do so, with none of the nurses from the unspecified religious groups indicating they would do so. The $p\text{-value}=0.02<0.05$ confirmed the existence of differing perceptions by religion.

Similarly, 64% of the Christians indicated that they would accept an organ from a different clan, whilst only 1% of the students from the other remaining religious groups shared the same sentiment. The $p\text{-value}=0.177>0.05$ indicated no significant opinions on how the three religious groups felt about accepting an organ from a person of a different clan.

4.7.5 Association between year of study and organ donation

4.7.5.1 Year of study and cadaveric donation

The assumption was that there were no differences in the opinions of the students across the various years of study, with regard to donating organs after death. To prove whether this assumption was true, the chi-square test was used at the 5% significance level. The assumption was tested against the alternative hypothesis that the opinions of the students did differ by year of study. Table 39 represents the distribution of the nurses' opinion on donating organs if they were to die tragically, across the four years of study.

Table 39: Year of study and cadaveric organ donation

Cadaveric organ donation	% Yes First Year	% Yes Second Year	% Yes Third Year	% Yes Fourth Year	Chi-square p-value
Kidney	13.1%	13.1%	6.9%	19.4%	0.01461
Heart	7.8%	9.6%	2.4%	15.7%	0.00078
Liver	7.9%	9.7%	2.4%	14.5%	0.00250
Pancreas	7.4%	8.0%	2.5%	12.3%	0.00534
Lung	9.6%	9.0%	7.2%	13.8%	0.26808

According to Table 39, there was an equal spread (in terms of proportions) of the respondents by year of study. The opinions of the first, second and third year responses range between 7.4% and 13.1% with the fourth year responses range from 12.3% to 19.4%. All the students, irrespective of year of study, differed in their opinions by year of study. In other words, the students felt differently by year of study with regard to donating a kidney, heart, liver, pancreas and lung should they

die tragically. All the p-values were less than 0.05, which also indicates that the student did not share the same sentiment.

4.7.2 Year of study and living donation

The students were asked how they felt about donating a kidney or liver to a relative or a stranger. Their responses were cross-tabled in Table 40 against year of study.

Table 40: Year of study and living organ donation

Living organ donation	% Yes First year	% Yes Second year	% Yes Third year	% Yes Fourth year	Chi-square p-value
Donate kidney to relative	7.4%	6.1%	3.1%	12.3%	0.01948
Donate liver to relative	7.4%	8.0%	2.5%	12.3%	0.01498
Donate kidney to stranger	9.6%	9.0%	7.2%	13.8%	0.26808
Donate liver to stranger	6.7%	7.3%	3.7%	29.3%	0.06677

Similarly to cadaveric organ donation, only a small percentage of students were willing to donate any organs in their lifetimes. Less than a third of the students were willing to donate, irrespective of their year of study. Those percentages only increased among the fourth-year students.

The respondents also had different opinions when it came to donating a kidney or a liver to a relative. This was confirmed by the p-value=0.01948 and p-value=0.01498 both < 0.05 , against the assumption that students share the same opinion about donating a kidney or a liver to a relative.

Different from donating to a relative, there is no difference in opinions to donate a kidney or a liver to a person the respondents are not related to by level of study. The p-value=0.268 and p-value=0.07 >0.05 suggest that the assumption of no differences across years is true.

4.7.3 Year of study and influence from family and community

The responses of the respondents with regard to the influence that other people would have on their decision to donate are presented in Table 41. The hypothesis was that there were no differences between the respondents by level of study. The alternative hypothesis was that there were such differences between the four groups.

Table 41: Year of study and influence from family and community

Sources of influence	% Yes First Year	% Yes Second Year	% Yes Third Year	% Yes Fourth Year	Chi-square p-value
Church elders	14.9%	9.2%	4.6%	16.7%	0.00294
Parents	11.7%	8.6%	5.5%	12.3%	0.17417
Spouse	14.8%	11.2%	5.3%	17.8%	0.00801
Siblings	12.3%	9.8%	7.4%	16.6%	0.08715
Relatives	13.0%	9.9%	5.6%	14.3%	0.08034

The results in Table 41 indicate significantly differing opinions by year of study; this disproves the assumption that the respondents would share the same opinion on how elders in the church and spouses, for instance, would influence their decision to donate, $p=0.00294$ and $p=0.00801<0.05$.

The assumption holds in how the respondents thought parents, siblings and relatives might influence their decision to give consent to donate organs, $p=0.17417$, $p=0.08715$, $p=0.08034>0.05$, suggesting no significant differences by year of study.

4.7.4 Year of study and professional capacity

Table 43 presents the responses of the respondents towards convincing their patients and relatives to donate and referring brain-dead patients to transplant teams. The aim was to assess whether respondents by year of study perceived their roles differently when it came to encouraging patients to donate organs.

Table 43: Year of study and professional capacity

Situation	% Yes First Year	% Yes Second Year	% Yes Third Year	% Yes Fourth Year	Chi-square p-value
Encourage patients and community to register as organ donors	21.3%	20.8%	14.0%	34.8%	0.00048
Refer patients to a transplant team for organ harvesting	14.5%	12.7%	11.0%	22.5%	0.02982

From Table 43, it can be seen that there are significant differences among the respondents by year of study. Whilst 34.8% of the fourth year respondents would encourage patients and communities to register as organ donors, only between 14 and 22% of the other groups would do so. Similarly, 22.5% of the fourth year respondents would refer brain-dead patients to transplantation teams for organ harvesting, whilst only between 11 and 13% of the other groups would do so. The opinions of respondents by year of study were significantly different (the p-values are less than 0.05), $p=0.00048$ and $p=0.02982<0.05$ respectively.

4.7.5 Year of study and organ transplantation

Table 44 presents the responses of the respondents towards organ transplantation. The aim was to assess whether the opinions differed by level of study.

Table 44: Year of study and organ transplantation

Transplant	% Yes First Year	% Yes Second Year	% Yes Third Year	% Yes Fourth Year	Chi-square p-value
Accept an organ from different religion	13.4%	12.3%	13.4%	22.3%	0.00000
Accept an organ from different clan	13.6%	12.4%	13.6%	24.9%	0.01332

From Table 44, it appears that there are significant differences between the groups in relation to accepting organs from persons of different religions. Whilst 22.3% of the fourth year respondents would accept organs from persons of different religions, only about 12.3% to 13.4% of the other groups would. The $p\text{-value}=0.0000<0.05$ confirmed the existence of differing perceptions by level of study.

In response to whether the respondents would accept an organ from a person of a different clan, 24.9% of the fourth years indicated they would; only between 12.4 and 13.6% of the students from the other remaining groups shared the same sentiment. The $p\text{-value}=0.01332<0.05$ indicated significant differences in opinions among the four groups. Both tests were thus in disagreement with the assumption that the nurses' views would be equally spread by year of study.

Perceptions about organ donation

The following results were observed from the output on the respondent's perception about organ donation. It is a good idea (92.6%), it is a bad idea (5.7%), it is not accepted by my community (1.1%), No comment (0.6%). The majority of the respondents (92.6%) felt that organ donation is a good idea.

Reasons related to cultural beliefs about organ donation

The following results were observed from the output on the respondent's reasons related to cultural beliefs about organ donation. My culture does not allow organ donation (64.7%), my culture allows organ donation (31.2%), No comment (4.0%). The majority of the respondents (64.7%) declared their culture does not allow organ donation.

Reasons relating to willingness to donate an organ

The following results were observed from the output on why the respondent was willing to donate an organ. Those who said they wanted to help & save people's lives (88.6%), for personal satisfaction (11.4%). The majority of the respondents (88.6%) were willing to donate an organ to help and save people's lives.

Reasons relating to unwillingness to donate an organ

The following results were observed from the output on why the respondent was not willing to donate an organ. Due to cultural beliefs (26.4%), Due to family beliefs (9.5%), I do not want to be buried without any part of my body (8.8%), Depending on health condition at the time (55.4%). The majority of the respondents (55.4%) were not willing to donate an organ as it will depend on the health condition at the time.

4.8 Overview of the findings – cause and effect diagram

The cause and effect diagram, usually referred to as the “fishbone”, was used to highlight the factors that were envisaged to be the drivers and restrains to organ donation and organ transplantation, and those that seem to be driving the students either to donate or to accept organs from other people, after engaging with the questionnaire and the original data set used to understand how the students felt about organ donation and organ transplantation. Figure 12 presents the cause and effect diagram.

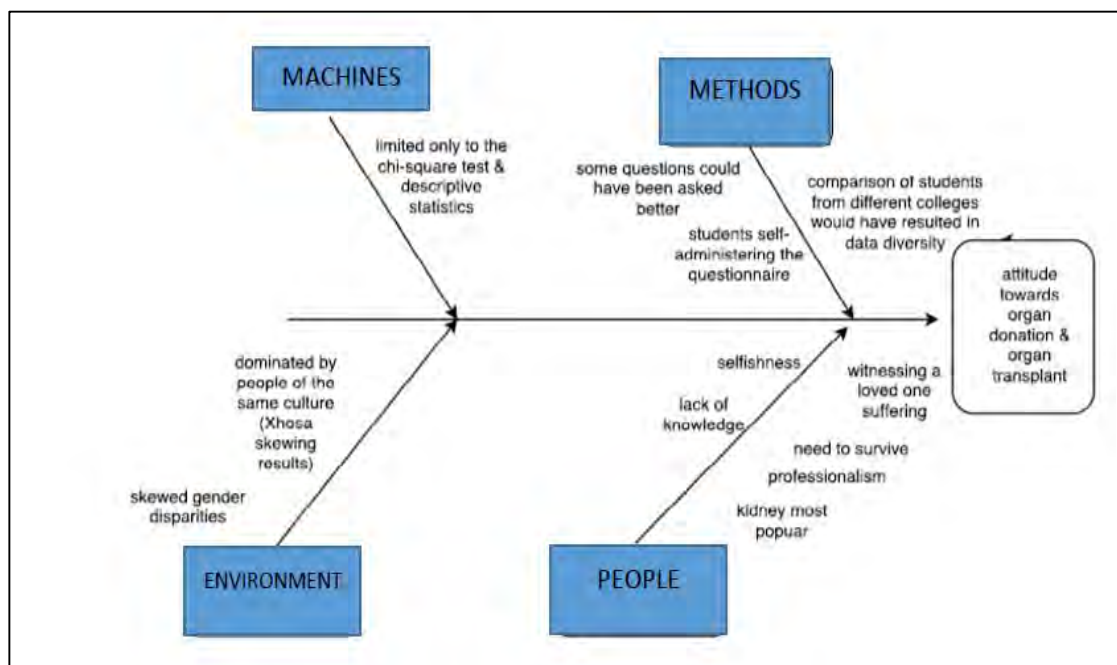


Figure 12: Causal diagram of organ donation and transplant

4.9 Summary

This chapter analysed and described the results of the study. Descriptive and inferential statistics were used for data analysis. Tables, graphs, charts and percentages were used to summarise the data obtained from the respondents. Inferential statistics were used to test the possible associations and differences that might exist between demographic variables (age, gender, ethnicity and religion) and variables of concern. The demographic data showed that the majority of the undergraduate nursing student were between the ages 21-30 (40.2%) and 31-40 (39.15), 89.4% were females, 96.1% were amaXhosa and the majority were of the Christian faith (94%).

The variables of concern studied herein were demographic variables, knowledge on organ donation, medical history, patient referral, professional capacity, living donation, cadaveric donation, organ transplant and consent to donate.

The undergraduate nursing students who participated in this study demonstrated that they had prior knowledge of organ donation, even though 98.40% were not registered organ donors. The majority of the respondents did not know anyone who had donated organ after death. This can be attributed to the level of care being rendered by the particular clinical institution where they are sent for their clinical placement. Transplantation is not one of the services provided at the particular health-care facility, and thus it is to be expected that the respondents had not been clinically exposed to organ donation and transplantation.

The following chapter will discuss the findings and results presented herein in more detail, and thereafter, will present the recommendations and limitations of this research, and a final summary.

CHAPTER 5: DISCUSSION OF FINDINGS/ RESULTS, RECOMMENDATIONS, LIMITATIONS AND CONCLUSION

5.1 Introduction

This chapter discusses the research findings and relates them to the relevant literature.

The aim of the study was to describe the attitudes and knowledge regarding organ donation and transplantation of pre-registration nursing students at a nursing college at Mthatha. The objectives of the study were:

- To determine whether pre-registration nursing students were aware of the possibility of organ donation.
- To determine the factors associated with either willingness or unwillingness of the pre-registration nursing students to donate their own organs, both when they were still alive (in the case of kidneys and liver) and after death.
- To determine the proportion of pre-registration nursing students in each year of study willing to consider becoming organ donors.
- To determine the association of demographics to organ donation.
- To determine whether the nursing students were willing to encourage patients and their families to donate their organs.

5.2 Demographic data

5.2.1 Age

The study results showed that the majority of the respondents were in the age group of 21-30 (n=72; 40.2%), followed by ages 31-40 (n=70; 39.7%). Although this was due to the recruitment policies, age was an important variable to consider as the older individuals were assumed to be more mature; they could also legally give consent and they had rights over their body organs, which was not the case with the youngest group. Pierscioneck (2008:5) suggested that, even if individuals did have rights over their body parts according to age and ability to take decisions, there were still some ethical and legal questions about ownership of organs.

The age groups of 31-40 were the most willing to donate their organs after death, whilst the more mature age groups of 41 and above age group were either undecided or certain that they would not donate their kidneys, heart, pancreas and lung/s when certified dead. Significant relationships existed between age and cadaveric donation of the kidney, heart and the lung. Age did not appear to influence the respondents in deciding whether to donate a kidney to a relative whilst they were still alive. The same findings had been noted in studies by Rios et al. (2006:920) and Cebeci, Dag and Karazeybek (2015:83), namely, that age did not influence attitudes towards organ donation (living-organ donation). Instead attitude towards living-organ donation was found to be influenced by the attitude towards cadaveric donation. A strong association was noted between age and liver donation to a relative while alive. The study results showed that the majority of the respondents who were willing to donate kidneys to a relative were between the ages of 31-40 years (n=53; 29.6%). This gives hope for more of related-living kidney transplantation and the cadaveric transplantation. Regarding liver lobe donation the ages 21-30 were the majority willing to donate living-related liver lobe (n=101; 56.9%) whilst the oldest group were unwilling to donate (n=72; 40.0%).

5.2.2 Gender

In this study, it was found that the majority were females (n=159; 89.4%) with fewer males (n=19; 10.6%). This being attributed to the recruitment policies of the college. In respect of the association between gender and organ donation, the findings of the study showed that both genders had similar thoughts about organ donation. Gender was noted to have an association with donating an organ to a relative, influence by parents, spouse, church leaders, siblings and relatives as females were more willing than males. Canova et al. (2006:309) found from the results of their study that females were more in favour of donating their organs as cadaveric donors rather than during their lifetimes. In respect to association between gender and professional capacity females (n=148; 83%) were to encourage the patients and communities to register as organ donors whilst males (n=14; 7.9%) were also willing to so. This showed existence of a significant difference on the capacity of respondents to encourage patients and communities to register as organ donors.

5.2.3 *Religion*

The study showed that the majority of respondents were of the Christian faith (n=171; 94%). Findings of the study showed to have no influence on a person's decision to receive an organ from a person of different religion, majority (n=132; 73.6%) were willing to receive an organ from a person of different religion. There were some differences across the respondents' religion regarding the influence of other people on their decision to donate or not to donate. Religious affiliation did not influence their attitudes towards organ donation. Kim, Fisher and Elliot (2006:579) explained that there was no religious objection to organ donation as long as it was done altruistically and remained an individual choice, which was supported by the donor's religion.

The majority who had positive attitudes towards organ donation were from the Christian religion; this was in line with the other studies, which have shown that the majority of religions, including Christianity, were not opposed to organ donation, especially if it was done altruistically. The findings of this study showed that church elders had no influence over the decision of a member of the church, either to donate or not to donate his/her organs. In this study, persons with a Christian affiliation were most likely to be identified as potential organ donors. Although the study findings showed that the respondents would not be influenced by church leaders to donate, it is important to remember, as mentioned by Davis (2006:282), that religious leaders can assist members of any group to understand more fully the religious stance on organ donation and transplantation. Badrolhisam and Zakaria (2012:197) reported that the participants in their study approved of donating organs, even if their religious beliefs opposed organ donation. This supports the studies that found the decision to donate or not to be a personal choice. Irving et al. (2011:2532) are of the opinion that some religious beliefs could also have a positive influence on organ donation and, where an influence was negative, it was most likely due to uncertainty or misrepresentation of religious orders, as proclaimed by church leaders.

5.2.4 *Ethnicity*

It was found that the clan had an influence when it came to accepting an organ from other clans; this was expected, since African people, especially those living in the Eastern Cape Province, value the clanship. The cultural beliefs differ from one clan

to another. Some cultural beliefs are that spirit transfer from donor to recipient needs ancestral approval before donation so as to protect the family left behind. Rituals are thus seen as important in the grieving process and as such organ donation would be interfering with that process (Irving, Tong, Jan, Coss, Rose, Chadban, Allen & Craig. 2011:2531). The importance of burying the body as a whole was one of the findings by Morgan et al. (2010). However, the findings of this study showed that the clan had no influence, as the majority of the respondents indicated that they would accept an organ donated by a person of a different clan. It was interesting to note that the attitudinal differences between those who were willing to receive an organ from a different clan were not as marked when investigating ethnicity in the study. The findings suggested that the attitudes and knowledge were similar among the Xhosa, Zulu and Sotho. Ethnicity had no influence on attitudes and knowledge towards organ donation (Wakefield, Reid & Homewood, 2011:165).

5.3 Prior knowledge

The majority of respondents (n=124; 62.8%) had prior knowledge and information about organ donation from various sources but only a small number (n=3; 1.6%) were registered donors. Similar findings were reported in a study by Chung et al. (2008:278), viz. even though there were participants who were willing to donate organs only a small proportion of them had committed to signing donor cards. They had obtained their knowledge of organ donation from education; the majority (89.2%) did not know anyone who had donated an organ after death. This can be attributed to the confidentiality that goes along with cadaveric donation. One may assume that information is only divulged to those working in that environment, for example, nurses working in the transplantation unit. When asked if they were prepared to register as organ donors, the majority indicated that they would not register (n=107; 55.3%). Reluctance to register for organ donation can be attributed to ignorance about organ donation or certain beliefs about it. Nursing students, however, are a group of people that is most likely to become role models for their patients and their relatives. Chung et al. (2008:283) states that some studies have highlighted the fact that patients had more positive attitudes towards organ donation, if they knew that their doctors were also donor card carriers. Irving et al. (2014) are of the opinion that willingness to register as an organ donor is influenced by the altruistic motive to save lives and to improve the lives of others, and that this needs to be communicated through campaigns. Prior knowledge of organ donation has

been noted in this study as having an association with willingness to donate an organ.

Knowledge about organ donation and transplantation was seen as a strong predictor of attitudes towards organ donation. Individuals with more knowledge about organ donation and transplantation were more likely to have positive attitudes and to accept organ donation, which would in turn increase the numbers of donor card carriers. A very small percentage of respondents (8.7%) had discussed their wishes with their families to donate an organ. Discussing the wish to donate an organ, willingness to donate, knowledge of organ donation and transplantation, signing a donor card, knowing someone who has donated/received an organ were the predictors of the attitude towards organ donation. Irving et al. (2011:2532) support the idea that a decision to donate is made based on many factors, amongst which is the level of knowledge about organ donation. Wakefield, Reid and Homewood (2011:164) also support the idea that knowledge about organ donation is a predictor of attitudes towards organ donation and transplantation.

5.4 Attitudes towards organ donation

This study showed that pre-registration nursing students in generally approved of organ donation. The majority were willing to donate a kidney (63%) and a liver lobe (45%) to a relative while alive. Irving et al. (2011:2529) also found that the participants in their study were more willing to donate to a relative than to a stranger. The majority (above 50%) were also willing to donate a kidney as cadaveric donors. The kidney was the only organ that the pre-registration students were willing to donate after death. There was reluctance to donate corneas, skin, pancreas, the intestines, liver and lungs. Similar findings were noted in a study by Etheredge, Turner and Kahn (2014:137), viz. that the Black African population was less willing to donate the heart, corneas and liver. This could be attributed to cultural beliefs, the role of the ancestors after death, and the importance of the body remaining whole after death for spiritual reasons. A comparison of donating to a relative and a stranger for gain or payment, the majority (n=112; 63%) were in favour of donating a kidney to a relative, and an even higher number (n=122; 68.3%) would not donate to a stranger.

The kidney was particularly important in this study since it is an organ that can be donated whilst alive, even before taking into account the latest technology of liver lobe donation. A study by Davies and Randhawa (2006) found a high incidence of end-stage renal failure among Black Caribbeans and Black Africans, and – interestingly – that these same population groups were reluctant to donate organs for transplantation despite this high incidence.

With regard to the specific question of the study about the knowledge and attitudes of undergraduate nurses towards organ donation and transplantation, the respondents in the nursing college had generally positive attitudes towards organ donation and transplantation. Zambudio et al. (2009:374) suggest that nurses are a subgroup that is in close contact with the patients and that therefore their attitude, whether positive or negative, towards organ donation will influence their patients' attitudes. One of the determinants of a positive attitude towards organ donation was the willingness of the respondents to encourage their friends, relatives and patients to donate and also to refer brain-dead patients to the transplantation unit. This was in accordance with a study by Edwin and Raja (2000:104) that 93% of the participants would encourage their friends and relatives to donate organs. Kim, Fisher and Elliot (2006(a):579) argue that an attitudinal factor is determinant of an intention. They found, for instance, that if an individual possesses a positive attitude towards organ donation, it is more likely that individual will be willing to donate. In the current study, it was thus deemed important to ascertain the influence of religion and clan on the willingness to donate/receive an organ from a person of a different religion or clan.

It was found that ethnicity did not have an impact on accepting or donating an organ under various circumstances; the decision still lay with the individual. Morgan et al. (2010) in their study also concluded that ethnicity, age, gender, education or religion had no significant association with attitudinal barriers to organ donation.

5.5 Influence from family and community

The majority of respondents indicated that they were not influenced by any of the potential sources of influence that were listed by the researcher in the questionnaire. More than half of the respondents (54%) were not influenced by their spouse in making a decision to donate; this contrast with the findings of Zambudio et al. (2009:372) who reported that the partner's opinion did influence an individual's

decision. In our case, the decision to consent to organ donation was a personal one. Irving et al. (2014) also report in their study that many people believed that the right to consent for donation is theirs and that nobody else could make this decision for them. In contrast to the above, Nathan et al. (2003:31) found that, although the law recognises the rights of individuals to donate by means of being donor card carriers, the family relatives of the deceased were ultimately given the option of consenting to organ harvesting. Mojela, Hift and Hairwadzi (2006:1) found that a decision to donate was personal and not influenced by external factors.

5.6 Professional role

It was hypothesized that the pre-registration nursing students belonged to a group that could be used to influence communities, patients and relatives of deceased patients to accept organ donation because of their professional role. The study findings were that the majority of the pre-registration nursing students (n=142; 80%) were indeed willing to encourage the patients and community to register and donate organs, and more than half (n=162; 91%) would refer suitable brain-dead patients to a transplant team for organ harvesting. Nurses were seen as having a major role to play in increasing the supply of organs for donation. Besides caring for the sick patients, they can give information to the patients and their relatives so as to understand organ donation; they can also give support to those families that have consented to organ harvesting throughout the process. Nurses have the ability to influence the public's views of organ donation (Olin, 2012).

Another finding from the study was that respondents did not know anyone who had either received or donated an organ. Only 3% of respondents (n=5) knew a person who had received/donated an organ. This could also be attributed to the level of locally available medical services, as transplant patients have to be referred to designated hospitals in the KwaZulu Natal Province or Western Province; no organ donation and transplantation facilities are available in the Eastern Cape.

The researcher highlighted the fact that nurses are in constant contact with the patients and the community. Nurses are a category of health-care professionals that could thus be used to persuade patients and their relatives to donate organs and to give consent for organs to be harvested from brain-dead patients. The study supports the role of nurses in organ donation by the majority of respondents who were willing to encourage patients and community to register for organ donation. It is

identified as a common cause that if the respondents who were undergraduate nurses were willing to encourage patients and relatives to register as organ donors, the undergraduates will also encourage relatives of the deceased to donate organs of their loved ones.

The undergraduate-nursing students who participated in this study demonstrated positive attitudes towards organ donation despite not being registered organ donors. From the study it is clear that if they can be given information of how to become registered organ donors, more donor card carriers can be available. The study showed that religion is not influential when it comes to an individual decision making on organ donation.

Based on the findings of this study discussed in detail, in this entire chapter, we will continue by making some recommendations, particularly with regard to nursing practice and education, before taking into account the limitations of this study. Finally, we present the conclusions of the research done herein.

5.7. Year of study

All the students irrespective of year of study differed in their opinions by year of study and which meant that they did not share the same sentiments. The majority of students who showed positive attitude towards organ donation and transplantation were from the fourth year level. One would expect that also the participants from the third year level of study would show more positive attitudes towards organ donation and transplantation as brain death and organ donation for the end-stage renal failure is content of general nursing science though at a very superficial level. This can be attributed to their level of study and much clinical exposure to the renal clinic as well as dialysis unit from third year level of study.

5.7. Recommendations

The following recommendations are derived from the findings of the study. They have been grouped according to implications pertaining to various areas, namely, nursing practice, nursing education, general recommendations, management and further research.

5.7.1 Nursing practice

- Information on organ donation must be made available to all health-care workers, particularly those who are in close contact with patients so as to inform them appropriately and to enable them to answer any questions that might be asked by the patients and their relatives on organ donation and transplantation.

5.7.2 Nursing education

- More modules must be presented on organ donation for pre-registration students, as only when they have adequate knowledge will they correctly, effectively and persuasively be able to inform patients, their relatives and the public in general about organ donation and the value of donating one's organs.
- Continuing professional development programs must be implemented for all nurse educators on the topics of organ donation and transplantation, as well as registration as an organ donor. They also need to be taught how patients and their families should be referred to a transplant team, when organs are to be harvested.
- The Nursing College can invite representatives from the Organ Donor Foundation of SA as well as the Regional Transplant Coordinator to discuss the aspects of organ donation and transplantation with all year groups of students.

5.7.3 General

- Awareness campaigns on organ donation need to place more emphasis on altruistic motives for donation.
- The forms of media that are most commonly used by the communities (for instance, radio, television and newspapers) should be employed to spread information about organ donation. Talk shows that interview the recipients of organs would also raise awareness in this regard and highlight the life-saving nature of this medical intervention.
- Information on how to register to be an organ donor should be made available and accessible, thus empowering the public and health-care workers with knowledge of how to become an organ donor.

- Visible posters on organ donation should be placed in communal places, like post offices, banks, churches and educational institutions.
- Free pamphlets on organ donation should be made available to the public, as is the case with other health priorities already.
- Talk shows focusing on organ donation and transplantation will inform and educate more people about these issues, which is likely to lead to greater acceptance of organ donation among the public.
- Religious leaders need to be included in any awareness campaigns, explaining the stance of religion with regard to organ donation and transplantation (this can be easily done in churches).

5.7.4 *Further research*

- It would be beneficial to replicate this study among other categories of the health-care profession and in communities with diverse ethnicities and religions.

In the next section, we look briefly at the limitations of this study.

5.8 Limitations

One of the limitations of this study were that few participants from other ethnicity groups participated in the study; it's not possible to extrapolate from the sample to the general population.

Another limitation was that the target population of this study was limited to soliciting the views of undergraduate nurses in the nursing profession at a specific college in the Eastern Cape. It was not possible to compare the responses in terms of clan and tribal groupings, as the majority of the participants were Xhosa-speaking people and they were not asked from the questionnaire their tribal grouping and thus could not assess those differences.

As the majority of the respondents were female nurses, with only a small number of male students (n=19;10.6% males), it was also not possible to determine from the responses whether gender differences were significant.

The study also did not investigate the topic of brain death in sufficient depth, nor did it seek to evaluate the knowledge of the respondents on this topic. However, the

findings could have been improved if more attention had been paid to this issue, as knowledge of brain death among health-care workers would increase their confidence in the process of encouraging relatives and family members of brain-dead patients to donate the organs of the patients and referring them to the transplant unit for the possible harvesting of organs.

6.3 Conclusions

The aim of the study was to determine the attitudes and knowledge of pre-registration nurses towards organ donation and transplantation in a nursing college in the Mthatha area of the Eastern Cape. It concluded that the pre-registration undergraduates have generally positive attitudes towards organ donation and transplantation. The study found no significant influence by others, including the church, parents, spouse and friends in their decision to donate or not. Instead, it was seen as an individual choice. Religion and gender also played no significant role in influencing the individual's attitude towards organ donation and transplantation. The results of the study indicated that the majority of respondents were indeed willing to donate organs for transplantation to save the lives of others. A minority were not willing to donate an organ, however, because they wanted to be buried with all their body parts. Although this was a minority response, it could not be ignored, as it was important to the respondents that a person's body be buried whole. This supports the results of other studies that also report a negative attitude towards organ donation, based on the belief that the integrity of the body should be maintained after death. In general, though, organ donation is seen as a "good thing" by the majority of the respondents.

REFERENCES

- Akgün, S., Tokalak, I. & Erdal, R. 2002. Attitudes and behaviour related to organ donation and transplantation: A survey. *Transplantation Proceedings*. 34:2009-2011.
- Alkhawari, F.S., Stimson, G. V. & Warrens, A.N. 2005. Attitudes toward transplantation in U.K.: Muslim Indo-Asian in West London. *American Journal of Transplantation*. 5:1326-1331.
- Alsaied, O., Bener, A., Al-Mosalamani, Y. & Nour, B. 2012. Knowledge and attitudes of health care professionals toward organ donation and transplantation. *Saudi Journal of Kidney Diseases and Transplantation*. 23(6):1304-1310.
- Armitage, W.J., Tullo, A.B., & Larkin, D.F.P. 2006. The first successful full-thickness corneal transplant: a commentary on Eduard Zirm's landmark paper of 1996. *British Journal of Ophthalmology*. 90(10):1222- 1223.
- Bailey, M.J. 2012. *Dr. Joseph E. Murray, who performed first successful organ transplant, dies at 93*. Available:
<http://www.boston.com/whitecoatnotes/2012/11/26/joseph-murray-who-performed-first-successful-organ-transplant-dies/ug9Npw3xfzaUtSyEz7pQPL/story.html>
[Accessed on 5 October 2015].
- Badrolhisam, N.I. & Zakaria, Z. 2012. Knowledge, religious beliefs and perception towards organ donation from death row prisoners from the perspective of patients and non-patients in Malaysian: A preliminary study. *International Journal of Humanities and Social Science*. 2(24):197-206.
- Bapat, U., Kedlaya, P.G. & Gokulnath. 2010. Organ donation, awareness, attitudes and beliefs among post graduate medical students. *Saudi Journal of Kidney Diseases and Transplantation*. 21(1):174-180.
- Barber, N. 2007. The nasty side of organ transplanting. 3rd ed. Available:
<http://pandora.nla.gov.au/pan/23910/20070525-0000/www.geocities.com/organdonate/index.html> [Accessed on 05 October 2015].

- Bøgh, L. & Madsen, M. 2005. Attitudes, knowledge and proficiency in relation to organ donation: A questionnaire based analysis in donor hospitals in northern Denmark. *Transplantation Proceedings*. 37(8):3256-3257.
- Bhengu, B.R. & Uys, H.H.M. 2004. Organ donation and transplantation within the Zulu culture. *Curationis*. 27(3):24- 33.
- "Black". 2015. *Merriam-Webster dictionary*. Available: <http://www.merriam-webster.com/dictionary/black> [Accessed on 02 October 2015].
- Botha, J. 2013. Paediatric living donor liver transplantation. *South African Medical Journal*. 102(11 Pt 2):879-880.
- Boulware, E.L., Ratner, L.E., Sosa, A.S., Cooper, L.A., Laveist, T.A. & Powe, N.R. 2002. Determinants of willingness to donate living related and cadaveric organs: Identifying the opportunities for intervention. *Transplantation Proceedings*. 73(10):1683-1691.
- Brink, J. G. 2009. The first human heart transplant and further advances in cardiac transplantation at Groote Schuur Hospital and University of Cape Town. *Cardiovascular Journal of Africa*. 20(1): 31-35.
- Bushak, L. 2013. Obama signs HOPE Act, opens doors for HIV positive organ donation, research. Available: <http://www.medicaldaily.com/obama-signs-hope-act-opens-door-hiv-positive-organ-donation-research-263594> [Accessed on 10 February 2014].
- "Cadaver". 2015. *Merriam-Webster Dictionary*. Available: <http://www.merriam-webster.com/dictionary/cadaver> [Accessed on 02 October 2015].
- "Cadaver". 2008. *Mosby's dental dictionary*. 2nd ed. St Louis, Mo.: Mosby/Elsevier.
- "Cadaveric donor". 2009. *Mosby's dictionary of medicine, nursing and health professions*. 8th ed. St. Louis, Mo.: Mosby/Elsevier. Available: <http://www.us.elsevierhealth.com> [Accessed on 10 October 2011].
- Canova, D., De Bona, M., Ruminati, R., Ermani, M., Naccarato, R. & Burra, P. 2006. Understanding of and attitudes to organ donation and transplantation: a

- survey among Italian university students. *Clinical Transplantation*. 2(20):307-312.
- Cantarovich, F. 1999. Organ commerce. *Transplantation Proceedings*. 31(7):2958-2961.
- Cantarovich, F. 2005. Public opinion and organ donation suggestion for overcoming barriers. *Annals of Transplantation*. 10(1):22-25.
- Cebeci, F., Dag, G.S. & Karazeybek, E. 2015. Undergraduate nursing students' opinions and attitudes toward organ donation: A survey in a Turkish university. *Journal of Nursing Education and Practice*.5(9):83-89.
- Chung, C.K., Ng, C.W., Li, J.Y., Sum, K.C., Man, A.H., Chan, S.P., Cheung, J.Y., Tang, B.Y. et al. 2008. Attitudes, knowledge, and actions with regard to organ donation among Hong Kong medical students. *Hong Kong Medical Journal*. 14(4):278-285.
- "Clan". 2015. *Merriam-Webster dictionary*. Available: <http://www.merriam-webster.com/dictionary/clan> [2015. October 2].
- Collins, T.J. 2004. Organ and tissue donation: a survey of nurses' knowledge and educational needs in an adult ITU in Canterbury. *Intensive & Critical Care Nursing: The Official Journal of the British Association of Critical Care Nurses*. 21(4):226- 233.
- Conesa, C., Rios, A., Ramıpez, P., Del Mal Rodriguez, M., Rivas, P. & Parilla, P. 2004. Socio-personal factors influencing public attitude toward living donation in south-eastern Spain. *Nephrology Dialysis Transplantation*. 19(11):2874-2882.
- Conesa, C., Rios, A., Ramirez, P., Sanchez, J., Sanchez, E., Fernandez, O.M., Rodriguez, M.M., Ramos, F. et al. 2005. Rural primary care centres as a source of information about organ donation. *Transplantation Proceedings*. 37(9):3609-3613.
- Creative Research Systems. 2003. *Sample size calculator*. Available: <http://www.surveysystem.com/sscalc.htm> [Accessed on 28 June 2015].

- Davies, M. 2002. The impact of health professionals' attitudes about being registered donors on the availability of organs. *Nursing Times*. 98(45):36-39.
- Davis, C. & Randhawa, G. 2006. The influence of religion on organ donation and transplantation among the black Caribbean and black African population: A pilot study in the United Kingdom. *Ethnicity & Disease*. 16(1):281-285.
- Declaration of Istanbul on Organ Trafficking and Transplant Tourism. 2008. *Nephrology Dialysis Transplantation*. 23(11):3375-3380.
- Demir, T., Sellimen, D. Yiridim, M. & Kucuk, H.F. 2011. Knowledge and attitudes toward organ/tissue donation and transplantation among health care professionals working in organ transplantation or dialysis units. *Transplantation Proceedings*. 43(5):1425-1428.
- Dierckx de Casterle, B., Verhaeghe, S.T.L., Kars, M. C., Collbrandt, A., Marleen, S., Stubbe, M., Deweirdt, N., Vincke, J. et al. 2011. Researching lived experience in health care: significance for care ethics. *Nursing Ethics*. 18(2):232-242.
- Dutraa, M.M.D., Bonfima, T.A.S., Pereira, I.S., Figueiredo, I.C., Dutraa, A.M.D. & Lopesa, A.A. 2004. Knowledge about transplantation and attitudes towards organ donation: a survey among medical students in northeast Brazil. *Transplantation Proceedings*. 36(4):818-820.
- Edwin, A.R. & Raja, D. 2000. Attitudes of health care professionals towards organ donation. *Indian Journal of Urology*. 16:98-105.
- "End-stage organ disease". 2010. *Mosby's pocket dictionary of medicine, nursing & health professions*. 6 ed. St Louis, Missouri: Mosby.
- Essman, C. & Thornton, J. 2006. Assessing medical student knowledge, attitudes, and behaviors regarding organ donation. *Transplantation Proceedings*. 38(9):2745-2750.
- Etheredge, H .R., Turner, R. E. & Kahn, D. 2014. Attitudes to organ donation among some urban South African populations remain unchanged: A cross-sectional study (1993 – 2013). *South African Medical Journal*. 104(2):133-137.

European Commission for Public Health (2008). DG Health and Food Safety. *Blood, tissues and organs*. [Policy]. Available:

http://ec.europa.eu/health/blood_tissues_organs/organs/index_en.htm [Accessed on 05 October 2015].

Gilman, J. 1999. Religious perspectives on organ donation. *Critical Care Nursing Quarterly*. 22(3):9-29.

Grove, S.K., Burns, N. & Gray, J. R. 2013. *The practice of nursing research conduct, critique and utilization*. 7th ed. St. Louis, Mosby: Elsevier.

Holman, A. 2013. Psychosocial determinants of organ donation intention and their relevance for public campaigns. *Postmodern Openings*. 4(1):9-27.

Human Tissue Amendment Act 2009. No 47 of 2009. Available: <http://www.legislation.vic.gov.au> [Accessed on 20 October 2011].

"Intensive care unit". 2009. *Mosby's dictionary of medicine, nursing and health professions*. 8th ed. St. Louis, Mo.: Mosby/Elsevier. Available: <http://www.us.elsevierhealth.com> [Accessed on 10 October 2011].

Irving, M.J., Tong, A., Jan, S., Cass, A., Rose, J., Chadban, S., Allen, R.D., Craig, J.C. et al. 2011. Factors that influence the decision to be an organ donor: A systemic review of the qualitative literature. *Nephrology Dialysis Transplantation*. 27(6):2526-2533.

Irving, M.J., Jan, S., Tong, A., Wong, G., Craig, J.C., Chadban, S., Rose, J., Cass, A., Allen, R.D. & Howard, K. 2014. What factors influence people's decisions to register for organ donation? The results of a nominal group study. *Transplant International*. 27(6):617-624.

Jackson, S. L. 2011. *Research methods and statistics: A critical thinking approach*. 4th ed. Belmont, CA: Wadworth.

Jacoby, L. & Jaccard, J. 2010. Perceived support among families deciding about organ donation for their loved ones: donor vs nondonor next of kin. *American Journal of Critical Care*. 19(5):e52-61.

- Jones-Riffell, A. & Stoeckle, M.L. 1998. Attitudes of upper division nursing students toward organ donation. *Journal of Continuing Education in Nursing*. 29(6):274-281.
- Khoza, S. 2009. The human organ trade: The South African tragedy. *South African Journal of Bioethics and Law*. 2(2):46-47.
- Kiberd, C. 1998. Curriculum effect on nursing students' attitudes and knowledge towards organ donation and transplantation. *ANNA Journal*. 25(2):210-216.
- Kim, J.R., Fisher, M.J. & Elliott, D. 2006. Attitudes of intensive care nurses towards brain death and organ transplantation: instrument development and testing. *Journal of Advanced Nursing*. 53(5):571-582.
- "Knowledge". 2005. Oxford Advanced Learner's Dictionary 7th ed. Oxford University.
- Lauri, M.N. 2006. Attitudes towards organ donation in Malta in the last decade. *Malta Medical Journal*. 18(4):25-29.
- Leighton. J. 1953. Limitations of descriptive method. 34(6) Available <http://www.jstor.org/stable> [assessed on 10 October 2015].
- Linden, K. 2009. History of solid organ transplantation and organ donation. *Critical Care Clinics*.(25):165-184.
- "Living donor". 2009. *Mosby's dictionary of medicine, nursing and health professions*. 8th ed. St Louis, Mo.: Mosby/Elsevier. Available: <http://www.us.elsevierhealth.com> [Accessed on 10 October 2011].
- Lopez-Montesinos, M.J. 2010. Organ donation and transplantation training for future professional nurses as a health and social awareness policy. *Transplantation Proceedings*. 42(1):239-242.
- Manzari, Z.S., Mohammadi, E., Heydari, A., Sharbaf, H.R.A., Azizi, M.J.M. & khaleghi, E. 2012. Exploring families'experiences of an organ donation request after brain death. *Nursing Ethics*. 19(5):654-65.

- Martinez-Alarcon, L., Rios, A., Lopez, M.J., Guzman, D., Lopez-Navas, N., Parilla, P. & Ramirez, P. 2009. Do nursing students understand the meaning of brain death? *Transplantation Proceedings*. 41(6):2060-2063.
- Mekahli, D. Liutkus, A., Fargue, S., Ranchin, B. & Cochat, P. 2008. Survey of first year medical students to assess their knowledge and attitudes toward organ transplantation and donation. *Transplantation Proceedings*. 41(2):634-638.
- Mekahli, D. Liutkus, A., Fargue, S., Ranzchin, S. & Cochat, P. 2009. Survey of first year medical students to assess their knowledge and attitudes toward organ transplantation and donation. *Transplantation Proceedings*. 41(2): 643- 648.
- Mentor, V. 2005. Family disagreement over organ donation. *Virtual Mentor*. 7(9):ii.
- Millar, A. 2011. Editorial. *Transplantation News*. 10 (no 3, issue 36). Available: http://www.sats.org.za/News/2011/Transplant_Vol%2010%20No%2003.pdf [2015, October 5].
- Molzahn, A.E, Starzomski, R., McDonald, M. & O'Loughlin, C. 2005. Indo-Canadian beliefs regarding organ donation. *Progress in Transplantation*. 15(3):233-239.
- Mojela, M.M., Hairwadzi, H.N. & Hift, R.J. 2006. The attitudes of second and third year medical students at the University of Cape Town towards organ donation and the factors influencing these. Cape Town: University of Cape Town. (Unpublished).
- Morgan, M., Adams, O.P., Seed, T.P. & Jones, R. 2010. Ethnicity and attitudes to deceased kidney donation: A survey in Barbados and comparison with Black Caribbean people in the United Kingdom. *BMC Public Health*. 10 (266):1471-2458.
- Muller, E. 2013. Organ donation and transplantation in South Africa: An update. *CME: Continuing Medical Education*. 31(6):220-222.
- Nacar, M., Cetinkaya, F., Baykan, Z., & Poyrazoglu, S. 2009. Attitudes and behaviour of students from the faculty of theology regarding organ donation: a study from Turkey. *Transplantation Proceedings*. 41(10):4057- 4061.

- Naqvi, S.A., Ali, B., Mazhar, F., Zafar, M.N. & Rizvi, S.A., 2007. A socioeconomic survey of kidney vendors in Pakistan. *Transplant International: Official Journal of the European Society for Organ Transplantation*. 20(11):934-939.
- Nathan, H. M., Conrad, S. L., Held, P.H., Mc Cullough, K. P., Pietroski, R. E., Smininoff, L. A. & Ojo, A. O. 2003. Organ donation in the United States. *American Journal of Transplantation*.3(4):29-40.
- Ndlovu, S.R., Korbyn, A. & Modiba, M.M. 1998. Attitudes of black South Africans concerning organ donation. *Journal of Transplant Coordination*. 8(4):241-242.
- Niles, R. 2006. *Robert Niles journalism help: Statistics every writer should know*. Available: <http://www.robertniles.com/stats/> [Accessed on 28 June 2006].
- Northam, H. 2013. *The power of the "ick" factor in organ donation*. Available: http://www.sharelife.org.au/_blog/ShareLife_Blog/post/the-power-of-theickfactor-in-organ-donation/ [Accessed on 05 October 2015].
- Olin, J. 2012. The nurse's role in organ donation. Available: <http://www.mcentral.com/blog> [Accessed on 11 December 2015].
- Olivier, M., Woywodt, A., Ahmed, A. & Saif, I. 2010. Organ donation, transplantation and religion. *Nephrology Dialysis Transplantation*. 26(2):437-444.
- "Organ". 2009. *Mosby's dictionary of medicine, nursing and health professions*. 8th ed. St Louis, Mo.: Mosby/Elsevier. Available: <http://www.us.elsevierhealth.com> [Accessed on 10 October 2011].
- Organ Donor Foundation, 2011. Available: <http://www.optn.transplant.hrsa.gov/news> [Accessed on 19 December 2011].
- Organ Donor Foundation, April 2013. [Statistics]. Available: <http://www.odf.org.za/> [Accessed on 17 April 2013].
- Organ Donor Foundation, November 2015. [Statistics]. Available: <http://www.odf.org.za/> [Accessed on 05 October 2015].

Organ Procurement and Transplantation Network, July 2011. Available: <http://www.optn.transplant.hrsa.gov.za/> [Accessed on 16 July 2011].

Organ Procurement and Transplantation Network, April 2015. Available: <http://www.optn.transplant.hrsa.gov.za/> [Accessed on 13 April 2015].

Parker, F. 2013. Organ donation: A fight to survive. *Mail & Guardian*. Available: <http://www.mg.co.za/article/2013-03-27-organdonation-facing-mortality> [Accessed on 3 March 2014].

Payne, C, 2014. Report. More men entering nursing profession. Available: <http://www.usatoday.com/story>. [Assessed on 13 October 2015].

Pierscioneck, B. K. 2008. What is presumed when we presume consent? *BioMedical Central Ethics*. 9:8.

Pike, R.E., Odell, J.A. & Kahn, D. 1993. Public attitudes to organ donation in South Africa. *South African Medical Journal*. 83(2):91- 94.

Prottas, J. & Batten, H.L. 1988. Health professionals and hospital administrators in organ procurement: attitudes, reservations, and their resolutions. *American Journal of Public Health*. 78(6):642-645.

Puri, K.S., Suresh, K.R., Gogtay, N.J. & Thatte, U.M. 2009. Declaration of Helsinki, 2008: Implications for stakeholders in research. *Journal of Postgraduate Medicine*. 55(2):131-134.

Rayner, B. 2003. Renal transplantation in South Africa. *South African Medical Journal*. 93(9):673-674.

Reardon, S, 2013. United States to allow transplants of HIV-infected organs. *Nature*. 13 November 2013. Available: <http://www.nature.com/news/united-states-to-allow-transplants-of-hiv-infected-organs> [Accessed on 5 October 2015].

Reddy, A.V.R., Gulera, S., Khazanchi, R.K., Bhardwaji, M., Aggarwal, S. & Mandai, S. 2003. Attitude of patients, the public, doctors and nurses toward organ donation. *Transplantation Proceedings*. 35(1):18.

- Rios, A., Ramirez, P., Galindo, P.J., Rodriguez, M.M., Martinez, L., Montaya, M.J., Lucas, D., Alcaraz, J. et al. 2006. Ancillary personnel faced with living donation in a Spanish hospital with a transplant program. *Revista Espanola de Enfermedades Digestivas*. 98:917-928.
- Rocher, M. 2010. How to become an organ donor. *Fairlady*. August 2010. Available: http://www.marierocher.com/resources/How%20to%20Organ%20Donor%20_FL.pdf [Accessed on 05 October 2015].
- Rohter, L. 2004. The organ trade: a global black market: tracking the sale of a kidney on a path of poverty and hope. *New York Times*. May 23, 2004. Available: <http://www.nytimes.com/2004/05/23/world/organ-trade-global-black-market-tracking-sale-kidney-path-poverty-hope.html?pagewanted=all> [Accessed on 23 May 2004].
- Rumsey, S., Hurford, D.P. & Cole, A.K. 2003. Influence of knowledge and religiousness on attitudes toward organ donation. *Transplantation Proceedings*. 35(8):2845-2850.
- Shaheen, F. A. M. & Souqiyyeh, M. Z. 2004. Increasing organ donation rates from Muslim donors: Lesson from a successful model. *Transplantation Proceedings*. 36(7):1878-1880.
- Shih, F.J., Lai, M.K., Lin, M.H., Lin, H.Y., Tsao, C.I., Chou, L.L. & Chu, S.H. 2001. Impact of cadaveric organ donation on Taiwanese donor families during the first 6 months after donation. *Psychosomatic Medicine*. 63(1):69-78.
- Siddiqui, O.T., Nizami, S., Raza, E., Ali, M. U., Bikak, M., Siddiqui, S., Khan, H. Mustafa, M.A. et al. 2012. Deceased-donor organ transplantation: Knowledge and attitudes among health care professionals managing critically ill patients in Karachi. *Experimental Clinical Transplantation*. 10(6):544-550.
- Siminoff, L.A., Gordon, N., Hewlett, J. & Arnold, R.M. 2001. Factors influencing families' consent for donation of solid organs for transplantation. *Journal of the American Medical Association*. 286(1):71-77.

- Slabbert, M., Mnyongani, F.D. & Goolam, N. 2011. Law, religion and organ transplants. *Koers Journal*. 76(2):261- 282.
- Slabbert, M. & Oosthuizen, H. 2007. Establishing a market for human organs in South Africa. Part II: Shortcomings in legislation and current system of organ procurement. *Obiter*. 28(2):304-323.
- Sobnach, S., Borkum, M., Millar, A.J.W., Hoffman, R., Muller, E., McCurdie, F. & Kahn, D. 2011. Attitudes and beliefs of South African medical students toward organ transplantation. *Clinical Transplantation*. 26:192-198.
- "Solid organ". 2015. *The Free Dictionary. Medical dictionary*. Available: <http://medical-dictionary.thefreedictionary.com/solid+organ> [Accessed on 05 October 2015].
- Sonmez, Y., Zengin, E., Ongel, K., Kisiouglu, N. & Ozturk, M. 2010. Attitude and behaviour related to organ donation and affecting factors: A study of last term students at a university. *Transplantation Proceedings*. 42:1440-1452.
- Steering Committee of the Istanbul Summit. 2008. Organ trafficking and transplant tourism and commercialism: The Declaration of Istanbul. *Lancet*. 372(9632):5-6.
- Stein, E. 2011. Transplantation in South Africa, 2011. *Transplant News*. 10 (33):36.
- Streat, S. 2004. Clinical review: Moral assumptions and the process of organ donation in the intensive care unit. *Critical Care*. 8(5):382-388.
- Surman, O.S., Saidi, R. & Burke, T.F. 2008. Regulating the sale of human organs: A discussion in context with the global market. *Current Opinion in Organ Transplantation*. 13(2):196-201.
- Tazzen, H. & Jafar, M.D. 2009. Organ trafficking: Global solutions for a global problem. *American Journal of Kidney Diseases*. 54(6):1145-1157.
- University of California San Francisco. Medical Center. 2002-2015. *Liver transplant glossary*. Available: http://www.ucsfhealth.org/education/liver_transplant_glossary/index.html [2011, January 15].

- UNAIDS. 2012. *Global report: report on the global AIDS epidemic*. Available: http://www.unaids.org/sites/default/files/en/media/unaids/contentassets/documents/epidemiology/2012/gr2012/20121120_UNAIDS_Global_Report_2012_with_annexes_en.pdf [Accessed on 05 October 2015].
- Urden, L.D., Stacy, K.M. & Lough, M.E. 2010. *Critical care nursing diagnosis and management*. 6th ed. St. Louis, Mo.: Mosby/ Elsevier.
- Valdes, M, Johnson. G. & Cutler, J.A. 2002. Organ donation after neurologically unsurvivable injury: A case study with ethical implications for physician. *Baylor University Medical Center Proceedings*. 15(2):129-132.
- Van den Berg, L. 2005. A perspective of South African Baptists from the Baptist Northern Association and its implications for preaching. M.A. Thesis. University of Pretoria. Available: <http://repository.up.ac.za/handle/2263/28354> [Accessed on 11 November 2013].
- Verheijde, J.L., Rady, M.Y. & McGregor. 2007. Negative attitudes and feelings of well-educated people about organ donation for transplantation. *Transplant International*. 20(10):906-907.
- Voice of Russia. 2014. *Should the sale of human organs be legalized?* [Online radio community discussion]. Available: http://sputniknews.com/voiceofrussia/news/2014_01_30/Should-the-sale-of-human-organs-be-legalized-2792/ [Accessed on 05 October 2015].
- Wakefield, C.E., Reid, J. & Homewood, J. 2011. Religious and ethnic influences on willingness to donate organs and donor behaviour: An Australian perspective. *Progress in Transplantation*. 21(2):61-168.
- Watts, J. 2007. Legal and illegal organ donation. *Lancet*. 369(9577):1901-1972.
- "White". 2000. *Collins English Dictionary*. Glasgow: HarperCollins.
- World Health Organization. 2010. WHO guiding principles on human cell, tissue and organ transplantation. *Transplantation*. 90(3):229-233.

World Medical Association. Declaration of Helsinki- ethical Principles for Medical research involving human subjects. Available: <http://www.wma.net/en/30publications/b3/index/html> [Accessed on 22 November 2011].

Zambudio, A.R., Alarcon, L.M., Parrilla, P. & Ramipez, P. 2009. Attitude of nursing staff toward organ donation in a Spanish hospital with a solid organ donation program. *Progress in Transplantation*. 19(4):371-377.

Zampieron, A., Corso, M. & Frigo, A.C. 2010. Undergraduate nursing students' attitudes towards organ donation: A survey in an Italian university. *International Nursing Review*. 57(3):370-376.

APPENDIX A: ORGAN DONATION AND TRANSPLANTATION SURVEY FORM

Please select and tick your preferred responses

The survey is anonymous; do not write any of your personal details on this form

Please do not complete this form if you have already done so within this academic year

Study Site	Code
Mthatha Main Campus	01

Demographics

[1]

Age Group	15- 20		31- 40	
	21-30		41-50	

[2]

Year Of Study			
1	2	3	4

[3]

Gender	Tick your response	
	M	F
CODE	0	1

[4]

Ethnicity		
	code	Tick your response
Xhosa	0	
Zulu	1	
Sotho	2	
Other	3	

[5]

Home Language:	code	Tick your response
Xhosa	0	
Zulu	1	
Sotho	2	
English	3	
Afrikaans	4	
Other	5	

Religious practice

[6]

Religion:	code	Tick your response
Christianity	0	
Judaism	1	
Islam	2	
Hindu	3	
Traditional African Belief	4	
Other	5	
Atheist	5	

None	6	
Other [please specify]	7	

[7]

Religion Practice	code		Tick your response	
	Y	N	Yes	No
Do you practice the same religion as your parents?	0	10		
Do you actively practice your religion?	1	11		

Personal attitudes and knowledge to / of organ donation:

[8]

Cadaveric donation:						
Would you be willing to donate each of the following organs if you were ever to suffer brain death as a result of an accident?						
	Code			Tick your response		
	Undecided	Y	N	Undecided	Yes	No
Kidney	0	10	20			
Heart	1	11	21			
Liver	2	12	22			
Cornea	3	13	23			
Skin	4	14	24			
Pancreas	5	15	25			
Lung	6	16	26			
Intestines	7	17	27			

[9]

Living donation; related:						
As a healthy person, you are asked to donate an organ to a relative. Would you be prepared to donate:						
	Code			Tick your response		
	Undecided	Y	N	Undecided	Yes	No
Kidney	0	10	20			
Part of the liver	1	11	21			

[10]

Living donation; unrelated						
Would you sell your kidney or part of your liver to a complete stranger for financial benefit if it was legally possible in South Africa?						
	Code			Tick your response		
	Undecided	Y	N	Undecided	Yes	No
Kidney	0	10	20			
Part of the liver	1	11	21			

[11]

Receiving An Organ:						
If you were to require a transplant yourself, would you accept an organ from a person of:						
	Code			Tick your response		
	Undecided	Y	N	Undecided	Yes	No
A different religion?	0	10	20			
A different gender?	1	11	21			
A different clan?	2	12	22			

[12]

Consent For Donation:				
Would your family members influence the giving of consent for organ donation, irrespective of what your personal wishes will be?				
	Code		Tick your response	
	Y	N	Yes	No
Family Elders/Uncles	0	10		
Church elders	1	11		
Parents	2	12		
Spouse	3	13		
Siblings	4	14		
Other	5	15		

[13]

Knowledge on donation:				
	code		Tick response your	
	Y	N	Yes	No
Have you had any prior information or education regarding organ donation in general?	0	10		
If your answer is Yes, what was the source of information?				
School	1	11		
Television	2	12		
Radio	3	13		
Newspaper	4	14		
Family, Friends, Work Colleagues	5	15		
Nursing college	6	16		
Other	7	17		
Do you know someone who donated an organ while living?	8	18		
Do you know someone who donated an organ after death?	9	19		
Do you know someone who has received an organ transplant?	10	20		

[14]

Your Role as a Health Professional:				
	code		Tick response your	
	Y	N	Yes	No
Would you encourage your patients & community to register as organ donors?	0	10		
Would you encourage a patient's relatives to donate their loved one's organs in the event that they were to suffer brain death as a result of illness?	1	11		
Would you assist/advise patients' families who may be asked to donate an organ?	2	12		
Would you refer suitable brain-dead patients to a transplant team for organ harvesting?	2	12		

Medical history and organ donation:

[15]

Medical History:				
	code		Tick response your	
	Y	N	Yes	No
Do you have a chronic medical illness	0	10		
If your medical condition required a transplant, would you be prepared to receive one?	1	11		
If in spite of your medical condition you were able to donate organs when you die, would you do so?	2	12		

[16]

Medical Conditions:				
If you have a medical condition, in which category is it on the following list?				
	code		Tick response your	
	Y	N	Yes	No
Heart Failure	0	20		
Hypertension	1	21		
Diabetes Mellitus	2	22		
Renal Failure	3	23		
Asthma	4	24		
Pancreas	5	25		
Thyroid Disease	6	26		
Liver Disease	7	27		
Colon	8	28		
Bladder	9	29		
Cancer	10	30		
Other	11	31		

Responses and donor registration:

[17]

Responses To Questions:				
	code		Tick response your	
	Y	N	Yes	No
Did your medical condition have a bearing on how you answered any of the above questions?	0	10		
Did your religion have a bearing on how you answered any of the above questions?	1	11		
Did your traditional cultural beliefs and practices have an influence on how you answered any of the above questions?	2	12		

[18]

Donor Registration:				
	code		Tick your response	
	Y	N	Yes	No
Are you registered as an organ donor?	0	10		
If not, would you be prepared to register as one?	1	11		
If you are a registered donor:				
Have you discussed your wishes for organ donation after death with your family?	2	12		
Is it important for doctors to discuss your wishes for donation after your death with your family?	3	13		
If your family opposes donation, would you prefer that their decision be respected irrespective of your wish to donate organs?	4	14		

[19] **State your perceptions about organ donation**

.....

.....

.....

.....

.....

[20] **Give reasons related to your cultural belief(s) and its influence on your decision of donating an organ**

.....

.....

.....

.....

.....

[21]. Explain why you would be willing to donate an organ

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.....

.....

.....

[22]. Explain why you would not be willing to donate an organ

.....

.....

.....

.....

.....

APPENDIX B: INFORMATION LETTER

19 Sidwadwa Drive
South Ridge Park
Mthatha
5199
10 March 2012

Dear Sir/Madam

I am a student at the Department of Health and Rehabilitation Sciences, Division of Nursing and Midwifery of the University of Cape Town. I am studying Master of Science Degree in Nursing. As a requirement for the degree, I have to conduct a research project in order to obtain the higher degree. The title of my research project is: - **Knowledge and attitudes of undergraduate nurses' towards organ donation and transplantation.**

The study is being undertaken because there are many different attitudes towards organ donation some people have no problems, others, for whatever reason would not consider this. The researcher wants to find out the student nurses' opinions about organ donation. Information obtained can be used in designing educational programs around awareness of organ donation.

You have been asked to participate in the study as you form part of the population to be studied. You have been randomly selected from the population and an anonymous questionnaire will be used to collect data. Data collected will only be used for the purpose of the study and thereafter destroyed after the required period. Data collected will be kept in a safe place and only be accessible to the researcher and the data analyst. You are asked to participate voluntarily in the research project and you may decide to participate or not. It will take you about 30 minutes of your time to complete the questionnaire. Please respond to all the questions in the questionnaire.

There is no penalty if you should choose not to participate in the study. You have a right to withdraw at any stage of the research project and you need not provide any explanation. There is no anticipated physical harm for the study; if however, you do feel distressed you will be referred to counselling services and the list of the contact persons is being provided for you. There will be no compensation for participating in the study.

Permission for the study has been obtained from the Faculty of Health Sciences UCT Human Research Ethics committee.....

For further information contact my supervisor Ms N. Fouche' at 021 4066672.

My contact details are as follows: - Mrs N.D.Gidimisana

Nozie.gidimisana@gmail.com

047- 5370036 (home); 047- 502 4078(work); 0832949184 (cell); 0866081277(fax)

The research supervisor

Ms N. Fouché

University of Cape Town Faculty of Health Sciences

Department of Health and Rehabilitation Sciences, Division of Nursing and Midwifery

F56 Old Main Building, Groote Schuur Hospital, Observatory 7925

The Chair of the Ethics Committee

Prof M Blockman

Department of Medicine

Division of Pharmacology K- Floor, Old Main Building Groote Schuur Hospital, Observatory 7925

Thank you

Yours faithfully

Nozibele Gidimisana

APPENDIX C: CONSENT FORM: ORGAN DONATION AND TRANSPLANTATION

UNIVERSITY OF CAPE TOWN
DEPARTMENT OF HEALTH AND REHABILITATION SCIENCES
DIVISION OF NURSING AND MIDWIFERY

TITLE OF THE PROJECT

KNOWLEDGE AND ATTITUDES OF UNDERGRADUATE NURSES TOWARDS ORGAN DONATION AND TRANSPLANTATION.

Iconfirm that I have read the information letter dated
2012.

I understand that my participation in the study is voluntary and I am free to withdraw at any time,
without giving any reason and with no penalties for my withdrawal.

I agree to take part in the above study.

Signed:

.....
Participant (name and signature)

.....
Date and place

.....
Researcher (name and signature)

.....
Date and place

APPENDIX D: LIST OF REFERRAL SOURCES

Dr P. Titi	0837514575	Psychologist
Mrs N.F. Nonkelela	0837604675	Psychiatric nurse.
Miss B. Tuswa	0828748859	Psychiatric nurse
Researcher		
Mrs N.D.Gidimisana	0832949184	

APPENDIX E: LETTER TO COLLEGE HEAD

19 Sidwadwa Drive
Southridge Park
5199
10 March 2012

Dear Sir/ Madam

Request to be granted permission to conduct a research project in the Eastern Cape province, (Lilitha College of Nursing) Mthatha district (Mthatha Main Campus).

I am a student at the Department of Health and Rehabilitation Sciences, Division of Nursing and Midwifery of the University of Cape Town. I am studying Master of Science Degree in Nursing. As a requirement for the degree, I have to conduct a research project in order to obtain the higher degree. The title of my research project is: - **Knowledge and attitudes of undergraduate nurses' towards organ donation and transplantation.**

The study is being undertaken because there are many different attitudes towards organ donation some people have no problems, others, for whatever reason would not consider this. The researcher wants to determine the opinions of nursing students about organ donation. Information obtained can be used in designing educational programs that can promote awareness of organ donation and acceptance thereof benefitting the Eastern Cape as well as South Africa.

Permission for the study has been obtained from the Faculty of Health Sciences UCT Human Research Ethics committee.....

For further information contact my supervisor Ms N. Fouché at 021 4066672.

My contact details are as follows: - Mrs N.D.Gidimisana

Nozie.gidimisana@gmail.com

047- 5370036 (home); 047- 502 4078(work); 0832949184 (cell); 0866081277(fax)

The research supervisor

Ms N. Fouché

University of Cape Town Faculty of Health Sciences

Department of Health and Rehabilitation Sciences, Division of Nursing and Midwifery

F56 Old Main Building, Groote Schuur Hospital, Observatory 7925

The Chair of the Ethics Committee

Prof M Blockman

Department of Medicine

Division of Pharmacology K- Floor Old Main Building Groote Schuur Hospital, Observatory 7925

Thank you

Yours faithfully

Nozibele Gidimisana

APPENDIX E: ETHICS APPROVAL



UNIVERSITY OF CAPE TOWN

Faculty of Health Sciences
Faculty of Health Sciences Human Research Ethics Committee
Room E52-24 Groote Schuur Hospital Old Main Building
Observatory 7925
Telephone [021] 406 6338 • Facsimile [021] 406 6411
e-mail: sumayah.ariiefdien@uct.ac.za

21 November 2012

HREC REF: 620/2012

Mrs N D Gidimisana
c/o Ms N Fouche
Division of Nursing & Midwifery
F-45
OMB

Dear Ms Gidimisana

PROJECT TITLE: KNOWLEDGE AND ATTRIBUTES OF UNDERGRADUATE NURSES TOWARDS ORGAN DONATION AND TRANSPLANTATION

Thank you for submitting your study to the Faculty of Health Sciences Human Research Ethics Committee for review.

It is a pleasure to inform you that the Ethics Committee has **formally approved** your collaboration in the above mentioned study.

Approval is granted for one year till the 28 November 2013.

Please submit a progress form, using the standardised Annual Report Form, if the study continues beyond the approval period. Please submit a Standard Closure form if the study is completed within the approval period.

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

Please quote the HREC. REF in all your correspondence.

Yours sincerely

PROFESSOR M BLOCKMAN
CHAIRPERSON, HSF HUMAN ETHICS

Federal Wide Assurance Number: FWA00001637.
sAriefdien